THE BRICKBVILDER

AN ARCHITECTVRAL MONTHLY

VOLVME XXII SEPTEMBER 1913 NVMBER 9

CONTENTS

PLATE ILLVSTRATIONS

	Architect	Plate
AUDITORIUM, UNIVERSITY OF ILLINOIS, CHAMPAIGN, ILL.	*C. H. Blackall*	133, 134
CHURCH, THE EUCLID AVENUE TEMPLE, CLEVELAND, OHIO	*Lehman & Schmitt*	129–132
HOUSE, CLEVELAND, OHIO	*Fountain & Moratz*	138
HOUSE, HARTFORD, CONN.	*La Farge & Morris*	140–142
HOUSE, COLUMBUS, OHIO	*Richards, McCarty & Bulford*	139
OFFICE BUILDING, DENTAL, BRIDGEPORT, CONN.	*Skinner & Walker*	143, 144
SCHOOL, RIDGE, NEWARK, N. J.	*E. F. Guilbert*	135–137

LETTERPRESS

Page

CHURCH OF PANHAGIA PAREGORITISSA, ARTA, EPIRUS, GREECE ---- *Frontispiece*

LIGHTING OF PUBLIC AND SEMI-PUBLIC BUILDINGS, THE ---- *L. B. Marks* 191

BUSINESS SIDE OF AN ARCHITECT'S OFFICE, THE ---- *D. Everett Waid* 197
THE OFFICE OF MR. DONN BARBER.
Illustrations from photographs and plans.

LATTICE — ITS USE AS AN ARCHITECTURAL EMBELLISHMENT, *George S. Chappell* 201
PART II. DETACHED ARBOR STRUCTURES.
Illustrations from photographs and drawings.

THE MASONIC TEMPLE, CAMDEN, N. J. HEACOCK & HOKANSON, ARCHITECTS 205
Illustrations from photographs and drawings.

ARCHITECTURAL JURISPRUDENCE ---- *Wm. L. Bowman, C.E., LL.B.* 209
PART V. THE ARCHITECT IN MUNICIPAL WORK.

EDITORIAL COMMENT AND NOTES OF THE MONTH ---- 212
Plate Description.

PVBLISHED MONTHLY BY

NEW YORK ROGERS AND MANSON COMPANY BOSTON

ARTHVR D. ROGERS, PRESIDENT AND TREASURER — RALPH REINHOLD, VICE-PRESIDENT AND BVSINESS MANAGER — RVSSELL F. WHITEHEAD, SECRETARY AND MANAGING EDITOR

ENTERED AT THE BOSTON, MASS., POST OFFICE AS SECOND-CLASS MAIL MATTER, MARCH 12, 1892

COPYRIGHT, 1913 BY ROGERS AND MANSON COMPANY

SUBSCRIPTION RATES

For the United States, its insular possessions and Cuba, $5.00 per year

For Canada, $5.50 per year For Foreign Countries in the Postal Union, $6.00 per year

All copies mailed flat

Trade supplied by the American News Company and its branches

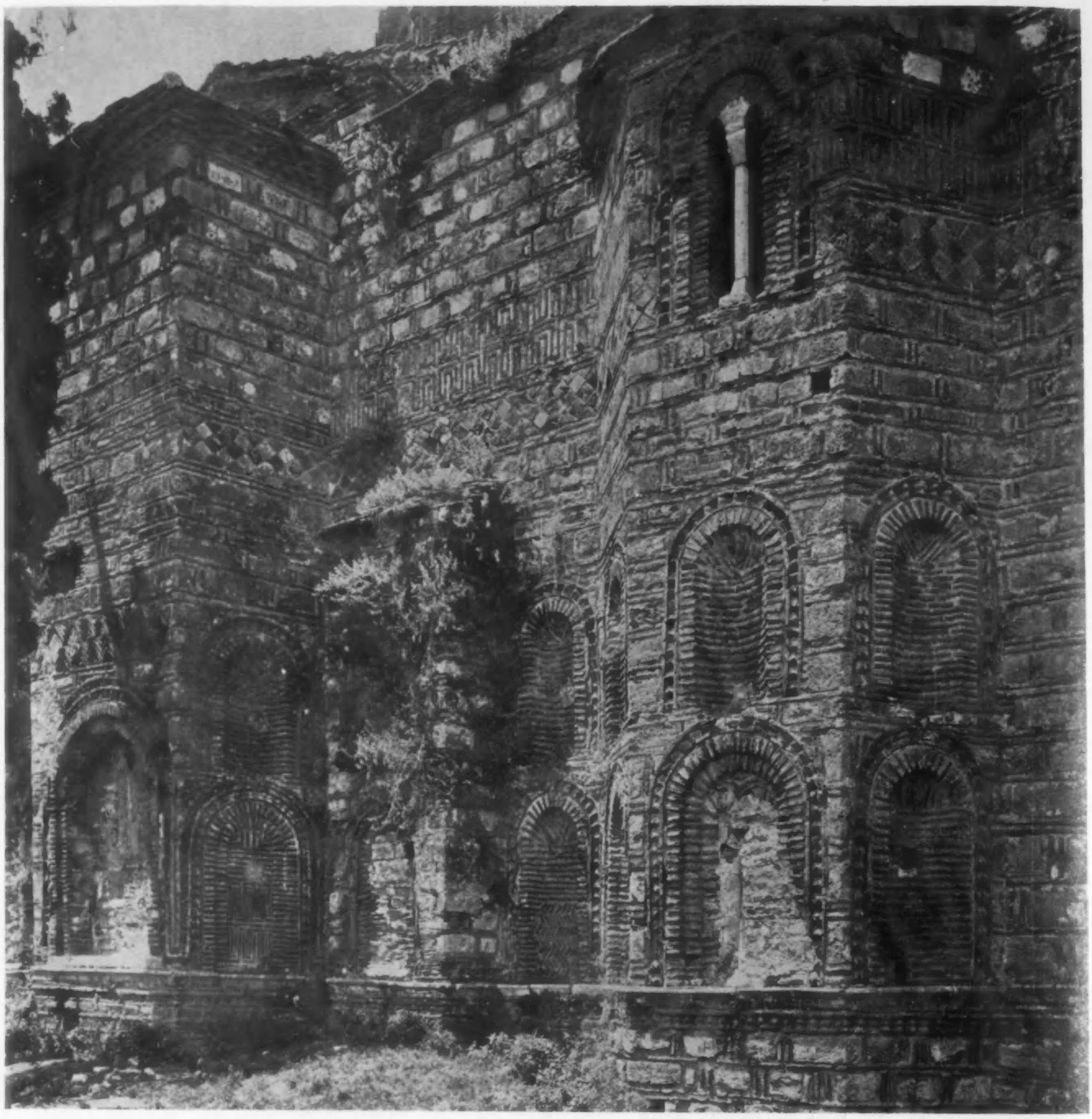


Photo by the Royal Prussian Photometric Institute.

CHURCH OF PANHAGIA PAREGORITISSA
(THE VIRGIN OF CONSOLATION) DETAIL OF EAST END
ARTA, EPIRUS, GREECE

End of Thirteenth Century. Typical of the last flowering of Byzantine art. All the patterns are formed of simple combinations of common brick, squared stone, and colored tile.

THE BRICKBVILDER

SEPTEMBER, 1913

VOLVME XXII. NVMBER 9.

THE LIGHTING OF PUBLIC AND SEMI-PUBLIC BUILDINGS

By L. B. MARKS

Consulting Illuminating Engineer, New York City.

THIS is the first of a series of articles by Mr. Marks to treat of the artificial lighting of public and semi-public buildings. So much of the architectural effect of the interior depends upon its illumination that the study of this problem is well worth the serious attention of the architect. The first of the series sets forth the basic principles underlying good lighting, and in subsequent issues a study of specific installations will be made, accompanied by illustrations of many fine examples. The classes of buildings to be discussed are grouped under the following general headings: 1. Court Houses, Custom Houses, Post Offices, City Halls, etc. 2. Museums, Art Galleries, etc. 3. Libraries, Schools, etc. 4. Theaters, Music Halls, etc. 5. Auditoriums, Assembly Halls, Armories, etc. 6. Churches, etc. 7. Hospitals, etc. 8. Railway Terminals, etc. 9. Hotels, Clubs, etc. 10. Offices, Exhibition Rooms, and Miscellaneous.

THE GENERAL PROBLEM OF ARTIFICIAL ILLUMINATION COMPARED WITH THAT OF DAYLIGHT. Natural light has always been the criterion of that which is most desirable to obtain by artificial lighting. The broad problem in artificial lighting is how to obtain, with the comparatively feeble flux of light we have at our command from artificial sources, as close an approach as possible to the character of lighting obtained from the enormous flux of daylight. With the well-known limitations of artificial light it would, at first sight, appear impossible to reproduce in effect the conditions which obtain in daylight illumination.

The development of the science of illuminating engineering has, however, demonstrated that step by step we are changing our methods of artificial lighting and approaching more nearly the ideal conditions. The handicap of artificial light is not nearly so great as would appear.

Contrast the problem of daylight illumination with that of artificial lighting. We have, on the one hand, a tremendous flux of light and an enormous area from which the light comes, and, on the other, an extremely limited flux and, usually, a comparatively small area from which the light comes. Fortunately, the eye is so constituted that we are capable of good vision between an extremely wide range of luminous intensities. We may see well, and without visual fatigue, in daylight at an intensity of 500 foot-candles (about 5,000 meter-candles) and more, and at 1 foot-candle (about 10 meter-candles) and less. Under good conditions of artificial lighting we may see well, and without visual fatigue; at several hundred foot-candles intensity and at less than 1 foot-candle intensity. The unit in which illumination is measured is called the foot-candle and is the intensity of light at a point on a surface 1 foot distant from a light source of 1 candle power, when the surface is perpendicular to the direction of the light rays.

The ability of the eye to adjust itself to very low-working intensities of illumination makes it possible to simulate daylight conditions in the design of the artificial lighting of interiors. While we recognize this possibility, we realize that before the eventuality of an ideal design there remains to be performed a mass of experimental work, investigation, and research, involving a close analysis of conditions of illumination of which we have practically no data at present, and, in general, a complete study of the problem from the physical, physiological, and psychological standpoints.

Up to the present time, lighting by artificial sources has, for the most part, been carried on by illumination from substantially point sources. These are the sources with which we have to do for the most part at present, and which will continue to occupy our attention in the immediate future.

FUNDAMENTAL PRINCIPLES OF THE ARTIFICIAL ILLUMINATION OF INTERIORS.

The general principles underlying good lighting are the same whether the light be used for the illumination of a public building or of a private house, and whether the source of light be an electric lamp, a gas lamp, or an oil lamp. A discussion of these principles follows, abstracted, in the main, from the writer's lectures on "Principles and Design of Interior Illumination," delivered at the Johns Hopkins University lecture course on illuminating engineering.

In public buildings the question of lighting often assumes a more important aspect than in other classes of buildings, by virtue of the use of the former by the

public. The consideration of light as a factor of safety must be given great weight in planning the lighting of public buildings. The design of the lighting layout with reference to the hygienic use of light is also of paramount importance. The scheme of lighting should be in keeping with and aim to bring out the beauty of the architecture and decoration and at the same time provide sufficient intensity of light to meet the demands of young and old, strong sighted and weak sighted. In public buildings as a rule the lights must be located out of reach of the public to prevent tampering or interference with the fixtures and lamps; the same restriction holds for location of switches which latter must be inaccessible to the public. The arrangement of circuits should be such as to make for the best economy in the operation of the lights; that is to say, careful provision should be made for the independent control of such lights or groups of lights as are likely to be used separately at times. However, too great refinement in control should be guarded against, as one of the important objects of the lighting, namely, to make the building cheerful in appearance and attractive at night, may thus be defeated. Above all, the lamps should be well shaded to minimize glare from the light source and consequent brilliant reflection from polished surfaces of glass, furniture, paintings, woodwork, paper, etc.

In studying the principles underlying the application of artificial light to the illumination of interiors, we must consider, broadly, the following:

I. Flux of Light.
II. Diffusion and Direction of Light.
III. Quality or Color of Light.

The study of the above involves the consideration of:

A. Selection of Illuminant.
B. Intensity of Illumination.
C. System of Illumination.
D. Location of Lighting Sources.
E. Lighting Fixtures: Globes, Shades, and Reflectors.
F. Glare and Intrinsic Brightness.
G. Regular or Specular Reflection.
H. Contrast.
I. Shadows.
J. Esthetic Considerations.
K. Economy and Efficiency.

The above headings are not arranged in the order of their importance. In fact, it would be difficult, if not impossible, to name any one item in the list which could be said to be less important than another. The violation of a single principle of illumination, no matter how seemingly trivial the violation may be, may make the difference between success and failure in the accomplishment of the desired result.

I. FLUX OF LIGHT.

The flux of light required for the adequate and suitable illumination of the interior will depend upon a variety of conditions. The governing consideration in all cases is, of course, the ability to see well, but coupled with this must be visual comfort while occupying the interior, whether for a short or a prolonged period of time. Unless all of the conditions of usage of the light and of equipment of the interior are definitely defined, it is impossible to state in advance, with any degree of precision, what flux of light will be required to supply adequate and suitable illumination.

The flux of light required for the illumination of a given interior will depend (*a*) upon the actual intensity necessary on the work or on the objects viewed, and this in turn will depend upon (*b*) the system of lighting employed; (*c*) the location of lighting sources with reference to the field of view; (*d*) the intrinsic brightness of the lighting sources; (*e*) the contrast in the degree of illumination in different parts of the interior; (*f*) the extent of regular or specular reflection from the objects viewed; (*g*) the color of the light and the color of the ceilings, walls, floor and room furnishings, and (*h*) upon the personal equation of the user.

In determining the flux of light required for the illumination of an interior, it is customary to assume a definite intensity on a reference plane, usually a horizontal working plane 2 feet 6 inches (0.76 m.) above the floor. Based on experience in existing lighting installations, we know that the flux of light required to give the needed intensity may vary between very wide limits, depending upon conditions which have been named above.

In determining the total flux needed, the method employed at present is to assume certain intensities that have been found in practice to be nearest the desideratum under well-defined conditions that have been established in a parallel case.

II. DIFFUSION AND DIRECTION OF LIGHT.

In daylight illumination of interiors, we have a natural diffusion of light, as well as definite direction. In illumination by artificial light, however, we find it very difficult to reproduce these conditions, and are often compelled in practice to sacrifice diffusion for direction or *vice versa*.

The layman in considering the illumination of an interior by artificial light sees little more in the problem than hanging a sufficiently powerful light in the center of the room, and possibly supplementing this by a number of side lights around the room. His idea usually is that if a sufficiently large flux of light is provided, all that remains to be done is to select lighting fixtures that suit his taste, and it is no uncommon experience to find that the owner of a building, be it a residence, a store, or an auditorium, selects his lighting fixtures from a stock in the open market, having regard mainly, if not only, for the cost of the fixture equipment and its general appearance. He is not apt to take cognizance of the question of suitable diffusion and direction of the light.

The lighting design should provide for such a diffusion and direction of light as to avoid jarring contrasts in different parts of an interior. This result can be accomplished by providing for the emission of a suitable proportion of the light rays in an upward and sideward direction to illuminate the ceiling and walls to a moderate intensity, and directing a suitable proportion of the light downward and sideward to illuminate more brightly the "working" portions of the room.

III. QUALITY OR COLOR OF LIGHT.

The quality or color of the light, and the color of ceilings, walls and furnishings of an interior, have an important bearing not only on the flux of light required to give

a definite intensity of illumination on the objects viewed, but also on the ability to see well with this intensity. Our conception of true color values of surfaces is based upon the values which obtain in daylight illumination. Correct color values cannot be obtained from light which is deficient in rays which a surface must reflect in order to be seen in its natural color.

From the standpoint of securing true color values our choice of artificial illuminants is extremely limited. In practice, however, even with this limitation, we can secure results from artificial light fairly comparable with those obtained in daylight, by adapting the illuminant so far as possible to the conditions to be met in each individual case.

A. Selection of Illuminant. As between illuminating gas, electric light, acetylene, oil, and candles, we find in practice conditions which make some one of these illuminants better suited to the needs of the user than any of the others. Generally speaking, however, the question is, what type of gas or electric lamp is best adapted for the lighting of a specific interior?

The quality or color of the light for the purposes in hand may likewise be a determining factor in the choice of the type of lamp. Thus, for example, in the home, the choice may be limited to illuminants capable of producing a mellow light.

The divisibility of the lighting unit, that is, the sizes in which the unit may be procured, may be the deciding factor in the selection of the type of lamp best suited for the conditions in hand. The suitable divisibility of the unit would depend upon the size of the interior, architectural, esthetic, and other considerations. It may be very important to select an illuminant that will be capable of such division that the lighting will not be seriously impaired if one or more of the lamps accidentally go out of commission.

The ability to direct or redirect the light of the lamp by suitable reflectors or diffusers may be a governing condition in selecting the type of lamp best suited to meet the needs in a given case.

Aside from the question of maintenance cost, the long life *per se* of a lamp may be a governing condition in cases where freedom from care of trimming or replacing the lamp is of paramount importance.

A primal consideration in the selection of a lighting source is, of course, that the light should be perfectly steady under all conditions of operation. The eye-strain which results from an unsteady or flickering light need not be dwelt upon here.

Where the eye is taxed continuously with the discrimination or discernment of fine details, as, for example, in the work of engraving, or where the task is that of reading a book or newspaper, the importance of having a steady light is naturally very considerably greater than where only casual observations of illuminated objects are necessary, or where the eye is not called upon to discern the details, as, for example, in foundries where the work is bulky and the only operation is that of casting large ingots which require no detailed inspection.

The choice of the kind of lamp to be used will often depend upon the system of lighting employed. The flexibility of the system and the ease of control of the lamps may also be a deciding factor in the selection of an illuminant.

B. Intensity of Illumination. The intensity of illumination required for good vision will depend not only upon the character of the work to be performed, but upon a number of conditions which have already been named. Tables have been published from time to time stating the intensity of illumination required for special classes of service. According to some of these tables, the intensity of illumination required for different classes of buildings and different kinds of work are as follows:

Residences, from 1 to 2 foot-candles (about 10 to 20 meter-candles).

Schoolrooms, from 2 to 3 foot-candles (about 20 to 30 meter-candles).

Libraries, from 1 to 2 foot-candles in general, and 3 to 4 foot-candles on the reading tables.

Factories, from 4 to 5 foot-candles, where no individual local lamps are used, and from 2 to 3 foot-candles, general lighting, where individual lamps supplement the general lighting.

Figures are also given for the illumination intensity required for different kinds of work, as, for example:

For drafting, from 5 to 10 foot-candles.

For engraving, 5 to 15 foot-candles.

For postal service, 2 to 5 foot-candles.

Where such figures are given they should be interpreted only in the light of the specific conditions under which the lamps were used, otherwise they may lead to entirely erroneous conclusions. It is difficult, if not impossible, to state definitely what illumination intensity is required in any instance without limiting the statement by a long list of conditions, some of which, with our present imperfect knowledge of the art, could not even be definitely set forth. Hence, while it is stated, for example, that the intensity of illumination required on the reading table of a library is from 3 to 4 foot-candles, the specific conditions attending the use of the light must all be known before it would be safe to so assume that substantially the same results would be achieved if an intensity of from 3 to 4 foot-candles were provided on the reading table of another library which it was desired to illuminate. Under changed conditions it might easily be that 1 or 2 foot-candles would be sufficient, or that 4 foot-candles would be insufficient.

It may be noted also that the required intensity will depend upon the "personal equation" of the user. An intensity that is satisfactory to one user may not be satisfactory to another.

INTENSITY OF ARTIFICIAL ILLUMINATION COMPARED WITH DAYLIGHT.

It was found in one instance that the intensity of daylight required for a certain class of work, under the specific conditions that obtained in the interior alluded to, was 3.2 foot-candles, whereas with one system of artificial illumination in this interior the intensity required was from 4 to 6 foot-candles and with another about 20 foot-candles.

In the case of an office which was illuminated by a cluster of lamps at the ceiling, it was found that an intensity of 2.1 foot-candles artificial light was ample for reading fine print with ease in any part of the room. On a very dark, cloudy day, in the same office, it was found

that the minimum intensity of daylight on the working spaces was 29 foot-candles.

In still another case it was found that with well-diffused artificial light approximately 6 foot-candles intensity on a vertical plane was required under the conditions that obtained for the particular class of work in hand, whereas in daylight, on a bright day, the actual intensity of natural light on the work was 400 foot-candles.*

In another case in the postal service it was found that an intensity of 1.6 foot-candles daylight illumination was sufficient for the work, and that artificial light was required when the intensity of daylight fell below this value. In this installation an intensity of approximately 1.5 foot-candles artificial light was sufficient.

In a public library it was found that an intensity of daylight of from 100 foot-candles down to 5 foot-candles satisfied the readers, and that 1 foot-candle intensity of artificial light satisfied some of the readers, whereas 6 foot-candles intensity was not sufficient for others.

Under actual practical conditions in daylight illumination we are able to see well throughout a very wide range of illumination intensities, provided the conditions under which the illumination is carried out are suitable. The actual intensity of illumination *per se* really plays a comparatively small part in the problem of securing good lighting.

In artificial lighting a "dim religious light" is often sufficient even for reading purposes, though the intensity of illumination on the book may fall considerably below 1 foot-candle. On the other hand, if artificial light is properly diffused and directed, the eye readily adapts itself to illumination intensities within extremely wide limits, and we can read with comfort in an interior in which the actual intensity on the pages of a book exceeds 500 foot-candles.

In daylight, under usual conditions, the eye works with a comparatively small pupillary aperture, because of the enormous flux of light. In artificial lighting, under good conditions of diffusion, direction, and contrast, the eye works with a comparatively large pupillary aperture, because of the relatively insignificant flux of light. Under these conditions we can therefore see well, and without visual fatigue, by artificial light at illumination intensities that are only a very small fraction of those which ordinarily obtain in daylight.

In daylight the eye is rarely exposed to the primary source of light, whereas in artificial light the primary source is often within the ordinary field of view. Hence the effect of contrast in intensity of the source and intensity of light on objects viewed, enters to a far greater extent in artificial lighting than in daylight.

C. System of Illumination. The various systems of illumination may be broadly classified as follows :

(*a*) General illumination by direct lighting.
(*b*) General illumination by indirect or semi-indirect lighting.
(*c*) Combination of (*a*) and (*b*).
(*d*) Local illumination.
(*e*) Combinations of (*d*) with (*a*), (*b*), and (*c*).

*See "Factory Lighting," L. B. Marks, Transactions Illuminating Engineering Society, November, 1909, p. 828.

Each of the above groups may be subdivided into two or more typical arrangements, as, for example, general illumination by direct lighting may be accomplished by (1) lamps exposed to view or (2) enclosed in globes or shades which diffuse and direct the light, or (3) mounted behind a transmitting screen or septum, such as a diffusing skylight or art-glass panel. General illumination by indirect lighting may be accomplished by (1) lamps concealed in opaque reflectors suspended from, and pointed toward, the ceiling, or (2) concealed in coves located on the side walls near the ceiling, or (3) concealed in high standards placed on the floor, etc. Illustrations of the various systems of lighting as carried out in practical lighting installations will be given later.

D. Location of Lighting Sources. Man has been accustomed from time immemorial to daylight illumination from side windows. In locating artificial lighting sources for the illumination of an interior, it would therefore seem logical to reproduce, as nearly as possible, the conditions that obtain in daylight illumination, and to locate the lighting units at or near the windows. If we could obtain a sufficiently large flux of artificial light without undue expenditure of power, and could distribute this flux in a manner analogous to that of daylight, the problem of locating the lighting units would be a comparatively simple one. With the restrictions with which we now have to contend, and with which we will probably have to contend for all time in supplying a substitute for the sun, we are compelled to so locate our lighting units that the comparatively meager flux of light we are able to obtain from them can be utilized to the best advantage to meet the special requirements of the interior with which we have to deal.

In artificial lighting the location of the lighting units will depend upon

(*a*) the use to which the interior is to be put,
(*b*) the system of lighting employed,
(*c*) the character of the illuminant used,
(*d*) the ability to diffuse and direct the light,
(*e*) the removal of the light from the field of view,
(*f*) the avoidance of strong contrasts in illumination,
(*g*) the structural conditions in the building,
(*h*) esthetic considerations,
(*i*) accessibility,
(*j*) economy.

Before deciding on the location of outlets, it is necessary to know the character of the illuminant to be used. If the vacuum tube, for example, is to be employed for lighting a large room, a single outlet on the ceiling or on the wall might be sufficient, whereas, if tungsten lamps are to be used, several ceiling outlets may be required to suitably distribute the light. If gas is to be used, the limitations in location due to necessary placement at some distance below the ceiling must be taken into consideration.

To determine the position of the lighting units it is necessary to decide on the system of illumination that will be best employed to meet the conditions of usage of the light. If general illumination only is to be used, only ceiling outlets need usually be considered. If local illumination is to be used, or a combination of local and general, the location of outlets for such illumination must be determined.

In a large room in which a moderate degree of illumination meets all the requirements, a lighting fixture centrally located on the ceiling may answer the purpose; whereas, if a very high degree of illumination is needed in some parts of the room, the central lighting fixture might have to be supplemented by local lamps placed more or less close to the objects to be lighted.

The location of the lighting sources will be governed in a material degree by the extent to which it is possible to direct or redirect the light of the particular illuminant, by reflectors and diffusers. They should be so located also as to keep the lamp as far as practicable out of the ordinary field of view, and to avoid violent contrasts in illumination.

Due cognizance must be taken of the structural conditions of a building in locating lighting sources. Sometimes the limitations are such that it is impracticable to place a lamp in any location other than in the center of a bay. Frequently, both from the standpoint of distribution of illumination and from the architectural standpoint, the location of the lighting unit in the center of the room, or in the center of a bay, works out to best advantage.

In deciding on the location of outlets cognizance must be taken of esthetic considerations. The placement of the lights must be such that the ensemble will look well. In other words, the arrangement of the lighting units must be esthetically as well as scientifically good. Where it is planned to carry out a certain style of lighting, as with fixtures of the Louis XIV period, for instance, the location of the outlets for the lighting units must be arranged accordingly. Often the need of accessibility for replacement or for local lighting or extinguishing of lamps is a governing factor in their location.

The broad question of economy, not only in the cost of the lighting installation but also in the cost of its maintenance, is another frequent deciding factor in the location of lighting sources. Although far better results in illumination may be obtained with one system of illumination than with another, the better system may be proscribed because of too great cost of installation and too great cost of operation. In such a case, the location of the lighting units must conform to the needs of the less expensive installation.

E. Lighting Fixtures: Globes, Shades, and Reflectors. It is not uncommon for architects to provide a certain number of outlets for the lighting of an interior, and to leave the matter of design or selection of the lighting fixtures in abeyance until the building is so far along in construction that the problem of lighting is not one of designing the most suitable lighting arrangements for the interior, but one of designing the most suitable fixtures to fit the limitations which have been imposed in the location of the outlets. In other words, the design of the lighting fixtures is left for an after-consideration.

To secure definite predetermined results, it is necessary to know in advance the general decorative scheme and wall coloring of an interior in order that the location of lighting units and the design of the lighting fixtures may be planned with reference to the required illumination of the finished interior. Without a knowledge of these conditions, the design of the lighting fixtures must be at best a compromise, and the lighting result must depend upon a "cut and try" method. Without the data referred to, the selection of globes, shades, and reflectors becomes a matter of guesswork rather than of scientific procedure.

F. Glare and Intrinsic Brightness. As a general principle of illumination, the specific brightness of the lighting sources within the field of view should be kept within certain limits. These limits have been variously placed by different authorities at from 4 to 5 candle-power per square inch (0.62 to 0.78 candle-power per square centimeter) of the lighting sources down to from 0.2 to 0.1 candle-power per square inch (0.031 to 0.016 candle-power per square centimeter) of actual surface. This refers to primary lighting sources. The figure for maximum intrinsic brightness per square inch of lighting source cannot, however, be taken as a criterion, unless the dimensions of the source itself be coupled with this figure. The area of the lighting sources within the field of view, as well as its specific brightness, must be kept within definite limits under given conditions to avoid eye-strain. No exact data are available as to the safe maximum limits in specific cases, and, indeed, such data, even if secured, would be of little practical value unless all the conditions of usage of the light were stated in connection therewith. For example, unless the conditions of contrast in illumination are known, the numerical value of the safe limit of intrinsic brightness would mean very little. Thus a specific brightness of 5 candle-power per square inch may not produce material eye-strain or visual fatigue if there is not excessive contrast; whereas, on the other hand, a specific brightness of 0.1 candle-power per square inch may produce considerable eye-strain and visual fatigue if there is excessive contrast.

Referring to the secondary lighting sources, such as the ceiling or walls, as the case may be, the specific brightness, even though numerically very small, becomes a serious matter if a large area of the illuminated surface is continuously within the field of view, as it often must of necessity be. There is need of complete and accurate data along these lines. We have been guided in the past by experience, but little has been done in this connection to formulate a scientific basis for correct illumination design. For example, exact knowledge of this phase of the subject is needed to give us a better insight into the question of the relative merits of direct and indirect lighting.

In connection with lighting installations we must consider, first, the glare of the primary and secondary lighting sources, and, second, the glare of the objects illuminated. In minimizing glare, the location of the lighting sources and their specific brightness and area must be taken into account. This involves the consideration of the diffusion and direction of the light, the contrast in illumination, and the regular or specular reflection.

G. Regular or Specular Reflection. The general problem of arranging the lighting sources with reference to the avoidance of regular reflection was considered in discussing the location of lighting units.

When light strikes an object, some of the rays are absorbed by the object, some pass through (in the case of a transparent or translucent object), some are reflected diffusely, and some are reflected regularly. The regularly reflected rays are those we are now considering.

The regular reflection from calendered paper of a book

may be so trying as to prevent good vision and cause severe eye-strain. Hence, if the position of the eye with respect to the lighting source and the object viewed is necessarily such that the rays that strike the object are directly reflected into the eye, the lighting is defective. If work is done at an ordinary polished oak table located in the center of a room, illuminated by a lamp directly above at the ceiling, the specular reflection from the surface of the table will be very trying to the eye unless the observer is seated in such a position that the direct reflected rays do not strike the eye. Unless the table is a long one, it will be impossible to escape a considerable percentage of the regular reflected rays. In such a case, under practical conditions, the use of an exposed lamp at the ceiling, even if the lamp be frosted and backed by a diffusing reflector, is almost prohibitive. To reduce the amount of regular reflection to a tolerable degree the lamp must be screened by a diffusing globe of considerable area and low specific brightness.

In practice, we find on all sides serious results from the direct reflection of light from objects viewed ; be it in the library of a palatial residence in which the library table is fitted with a polished plate-glass top, or in a factory in which the workmen handle highly polished pieces in the assembling of apparatus or face highly polished portions of machines, the baneful influence of regular reflection may be noted. In many cases the excessive regular reflection is due to faulty illuminating engineering.

In one instance in actual practice it was found in a factory that the direct reflected light which reached the eyes of an operator who was at work on polished material was almost forty per cent of the light which reached the object viewed. When this direct reflection was cut down by a change in the installation, the operator could see the work much better and with much less visual fatigue.

H. Contrast. It has been stated that in planning the artificial illumination of an interior, the diffusion and direction of light should be such as to avoid jarring contrasts in illumination in different parts of the interior. There is, perhaps, no single item that comes up in the consideration of a lighting scheme that is of more importance, from a physiological standpoint, than that of contrast. This factor has already been considered in discussing the different systems of carrying out illumination and the requisite intensity of illumination for specific kinds of work. We may consider the subject of contrast under two divisions:

(*a*) Contrast in intensity or character of illumination in different parts of the same room or space.

(*b*) Contrast in the illumination of two contiguous rooms or spaces.

If an observer passes directly from one interior in which the illumination is of a high order to a contiguous interior in which the illumination is of a low order, the intensity of illumination in the second interior may strike him as being insufficient. Had the order of the illumination in the one interior been the same as that in the other, even though the illumination in both interiors were less than that of the less brightly lighted one, the observer might have found this reduced intensity of illumination quite sufficient. If, after spending some time in the less brightly lighted interior, the observer passes to the more brilliantly lighted adjoining room, he may deem the latter over-illuminated. These effects are due to contrast in illumination.

An isolated show window, having a moderate intensity of illumination, may admirably set forth the wares displayed therein, but when a neighboring window, having eight or ten times the intensity of illumination of the first, is lighted, the first will appear but dimly lighted, and the owner to give due prominence to his display will be compelled, because of contrast with the neighboring window, to raise the plane of his illumination.

Actual measurements show that largely because of this principle of contrast the plane of illumination in stores, public buildings, places of amusement, and even residences, has been carried much higher in some cities than in others, and abnormally high in some sections of the same city. For example, the plane of illumination in the leading stores, especially the department stores in New York City, has gradually been raised from 1 to 2 foot-candles to 4 to 6 foot-candles. A part of this rise may be accounted for by the comparatively recent introduction of high efficiency lamps, such as the tungsten, gas mantle burner, and other types; but the most potent factor underlying this increase in intensity is undoubtedly the principle of contrast. When your neighbors' stores are brightly lighted, you are compelled in self-defense to light your own place brightly because of the contrast. When your streets and public spaces are more brightly lighted, you are compelled to light your homes more brightly because of the contrast.

Considering now the question of contrast in different parts of the same room, we have an analogous condition to that just discussed. If one part of a room is extremely bright and another part extremely dark, the bright part appears brighter by contrast, and the dark part, darker. If these contrasts are extreme, the eye receives a shock more or less violent in glancing from one part of the room to another ; and if, as may happen when several people in conversation are seated around a room illuminated in this way, one frequently looks alternately from a dark section to a light section of the room, the eye is soon severely taxed. If, however, the conditions of contrast are only very moderate, the eye may actually be rested by glancing from the brighter objects to the darker objects in a room.

If brightly lighted walls or ceiling be within the ordinary field of view, the discernment of objects in the room or of the printed matter on the page of a book on which the illumination intensity is less than that of the walls and ceiling, will be far more difficult than if the illumination intensity on the objects viewed were greater than that of the walls and ceiling within the field of view.

A common example of lighting, in which the evil effects of violent contrast are strikingly exhibited, is the illumination of a moderately large dining room in which the walls are very dark in color, and the illumination carried out exclusively by a central dome fixture, approximately 2 feet (61 centimeters) above the table, the fixture being equipped with two or three 16 candle-power incandescent lamps within the dome, which latter is constructed of slightly translucent art glass. The table is brilliantly illuminated, the intensity on the tablecloth being not infrequently from 8 to 10 foot-candles (80 to 100 meter-candles). In looking across the table to the person seated opposite, one looks through a field of great brightness at the table into one of almost dense blackness at the walls. It need hardly be stated that this violent contrast is conducive to eye-strain.

✓The Business Side of an Architect's Office.

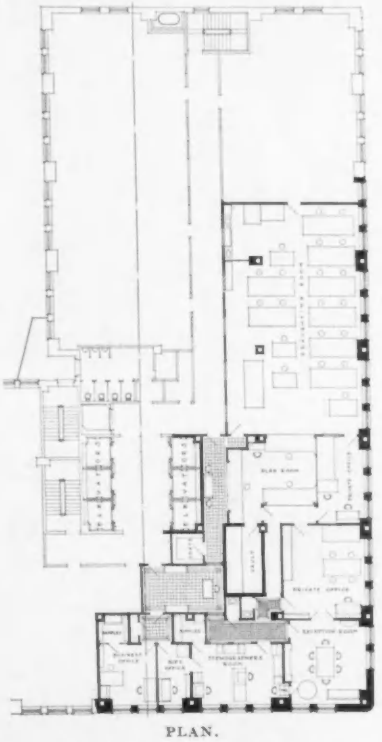
THE OFFICE OF MR. DONN BARBER.

BY D. EVERETT WAID.

THE architect who is about to establish himself in a new office may wisely study the arrangement worked out by Donn Barber in the new Architects' Building. It is an arrangement which is a model in that it illustrates the virtues of many other architects' offices. Some time ago THE BRICKBUILDER published a description of the suite occupied at that time by Mr. Barber,

MR. BARBER'S PRIVATE OFFICE.

but in order to keep up to date we must now show the office in which he has still further developed his ideas as to what an architect's workshop ought to be. Find on the diagram the "Plan Room" and you will see the heart of the old office which was moved bodily to the new quarters, where, in the geographical center of the new office, it is known to the office force as the "conning tower." The plan clerk in command there looks out in every direction over ample counters: toward the "boss" and the clerical force on one side, toward the head draftsman and the specification writer on a second, toward the drafting room on a third side, and toward the contractors or their messengers on a fourth. One can picture to himself the orderly and systematic way in which drawings and specifications slide back and forth over those counters and are constantly kept track of while they are being developed or are on their way to the performance of their various functions. At night all tables are cleared (except of drawings tacked down) and covered, and the "conning tower," closed with counterweighted glass sashes, is locked up tight. The location of the main control of everything pertaining to drawings, catalogues, supplies, keys, etc., is all under the plan clerk.



PLAN.
OFFICE OF DONN BARBER.

There is a well thought out system applied to the various details controlled in this department which makes the proper care of drawings and specifications a simple matter. All scale drawings are filed away flat, in folios, in a fireproof vault, in drawers 58 inches wide, 38 inches deep, and 2¾ inches high. For large works the folios are separated in special sections such as plans, elevations and sections, details, sketches, plumbing, heating, etc., with headings on the right-hand end of the folios. All drawings are stamped on the bottom right-hand corner with a special stamp, similar to that for the Hartford National Bank job, which is shown herewith. When a drawing has changes made upon it, a stamp of revision showing the date is stamped near the title. On each revision a special note is made of each change, under the date, so that the revisions of a drawing can be easily found. These notes are placed in the lower right-hand corner, above the stamps, and sketches are similarly marked, but with smaller stamps. All full-size details and shop drawings are folded to a uniform size, 8 inches by 21 inches, on one of the counters, which is ruled in rectangles, 8 inches by 21 inches, for this purpose. Prints for mailing are of the same size and are simply folded in half and mailed in envelopes 9 inches by 21 inches. Shop drawings, on receipt, are stamped "Received — (date)" on the back in the right-hand corner by the plan clerk and then entered on a shop drawing card. They pass in turn to the head draftsman and the checker. After being checked, both drawing card and prints are stamped "Returned for Correction" or "Approved," with date, as the case may be, and to whom issued; then the clerk makes out a receipt, ready for delivery of prints by messenger or mail. Full-size details and shop drawings are filed in steel drawers 23 inches wide, 30 inches deep, and 9½ inches high, with special guides to separate the different works and with a subdivision for classification of trades numbering from 1 to 31.

Miscellaneous sketches are filed in drawers 24 inches wide, 30 inches deep, and 16 inches high in special combination guide folios. This is very important as it makes a place for all of the little odds and ends and special notes, which are given to the draftsmen by Mr. Barber or other heads, as the case may be, and are therefore kept on file for verification, instead of being put in the usual way on hooks for the littering of the drafting room and eventually being forgotten and thrown away.

DRAFTING ROOM.

Specifications are filed vertically in drawers 12 inches wide, 30 inches deep, and 9½ inches high, with guides separating the different buildings, and with metal followers to keep them vertical.

Samples of all finishes and materials for approval of work in hand are kept in separate drawers and are all stamped the day they are received and approved, with the name of the job, and filed in drawers 24 inches wide, 30 inches deep, and 3 inches high, each drawer being labeled with the name of the building to which the material refers.

All catalogues are filed vertically in drawers 15 inches wide, 30 inches deep, and 13 inches high, special section guides separating the classification of all trades, thereby providing a most efficient method of getting any catalogue immediately, and also having the advantage of keeping all catalogues on one subject together.

The numbering of drawings, plans, elevations, and sections is as follows:

00. — Location Plan.
02. — Sub-Basement.
01. — Basement.
1. — 1st Floor.
2. — 2d Floor.

Scale details start from 25 or 50, as may be determined by the size of the building; full size details are from 500 on; steel plans from 100; plumbing from 200; heating from 300; electric from 400.

The illustrations shown on page 200 with explanatory notes reproduce various printed forms. Mr. Barber believes in a generous use of rubber stamps as labor-savers, and the examples shown forestall any facetious remarks about rubber stamp designing.

Specifications are written on sheets 8½ inches by 11 inches, with 1 inch binding margin on the left side of the page and 1½ inch margin on the right side for paragraph headings. This is an unusual but excellent arrangement. Specifications are bound in cloth-lined white paper covers with the architect's name printed and the title rubber-stamped on the outside.

The patient reader, impatient though he be with details of "blanks" and "system," will be interested to see other features of this office. The drafting room is a well lighted, rectangular room free and clear of alcoves and capable of one hundred per cent enlargement by inclusion of space now sublet to others. The ceiling is white and the walls, finished in "oatmeal" texture, are chrome-cream in strength of color. Semi-indirect artificial lighting, in the form of suspended hemispheres of white glass, was tried as an experiment with fair results, but individual drop cord lights (see illustration) have been installed recently. The concrete floor is covered with linoleum cut into tiles, about 9 inches square. This kind of flooring, by the way, is used in a number of architects' offices — sometimes successfully cemented down, and sometimes not. In his private office Mr. Barber has used cork tiling — a most satisfactory flooring surface.

CORNER OF DRAFTING ROOM.

The visitor will note the presence of a convenient row of porcelain lavatories and a sink in the drafting room, the sink being a long one just right for washing off a color drawing; also a drawing board case holding several boards glue-mounted with drafting paper ready for use, each board on edge in its own compartment. He will see, too, a bulletin board on which is posted, among other items intended for general information to the office force, a list of

STENOGRAPHERS' ROOM.

employees with the dates of vacations. This brings to mind the fact that Saturday is an all-day holiday, the time being made up by fixing regular office hours on other days at 9 to 6 o'clock. It is arranged, however, in alternation that at least some one responsible member of the office shall be on duty Saturday to take care of pressing business.

A glance at the plan reveals the workably convenient relation of the different parts of this office: the easily maintained privacy of Mr. Barber's personal desk and drafting table, which is yet equally accessible to the draftsmen, to the clients, and to the executive end of the office. Note the facility with which an usher on guard in the entrance hall can put a caller in touch with the plan room, the business office, the inner sanctum, or the reception room, as the case may require, without needless interruption of those who are not concerned.

The reception room is furnished quite elaborately, yet not in the manner of a drawing room or monumental library. It contains some very fine furniture, tapestries, and rugs which the owner has collected, and which, in their fine grouping, supply visible examples to illustrate points in discussion with clients. The ceiling is a distinguished example of monumental treatment in plaster — a feature which characterizes many of the interiors designed by Mr. Barber. Such furnishing of the parts of the office in which clients are received as will exemplify the characteristic note of an architect's work has a great missionary value, for it enables one easily to impress a client with the force of his convictions or the merits of the scheme he advocates.

THE "CONNING TOWER."

CORNER OF
MR. BARBER'S PRIVATE OFFICE.

RECEPTION ROOM.

(*Editor's Note.*) — The time expended in studying the problem of arranging the various parts of this office has been well invested, for it has resulted in an efficiency in the working force which could not be had by mere accident or by any implicit faith in the interests of the individual members of the organization toward the general work of the office.

The business world in the last decade was greatly occupied in the pursuit of system, and now that its value has been conclusively demonstrated, it has turned to the cultivation of efficiency. This is, of course, the logical outcome of systematizing work, office methods, etc.

In many architects' offices, however, business methods have not kept pace with the growth of their general practice, and therefore much valuable time is lost and the running expenses are greatly increased because of this fact. This situation reacts on the various heads and employees to the detriment of their personal efficiency, whereas in the office where each individual knows his work and is surrounded by the proper means for carrying out this work no such loss of time and money is experienced.

This brings up the old contention that creative art and business system do not travel together in harmonious relation, but it takes only a hasty consideration of the architects of this country, whose efforts have brought them success, not only in a business sense, but also in the creation of beautiful buildings, to entirely refute this long nurtured opinion.

Architecture for the average person is not as remunerative a profession as many others where less special training and intellect are required, so it behooves an architect to look to his business

methods to check the extravagances of time and money which will surely eat into his profits.

Even with a most competent and efficient working organization, success in architectural practice is dependent to a great extent upon the intimate relation of the architect himself to the work going on in his office, and the experience of many offices clearly indicates that serious mistakes can be avoided if the details of office practice are so arranged that the architect can keep constantly in touch with all stages of the work.

It is comparatively easy to bring about this result in the small office, where the architect is his own specification writer, where he himself visits buildings during their construction, etc., but in the large office it becomes a serious tax on his energy to constantly keep these matters in mind, so that a system of written reports from superintendents and others having executive powers becomes necessary. This furnishes accurate data, which the head of the office can at any time refer to and thereby ascertain the progress of any given phase of the work.

FULL SIZE DETAIL **SCALE DETAIL**

BUILDING No.	BUILDING	DRAWING No.
117	HARTFORD NATIONAL BANK, Hartford, Conn.	3
TITLE	PLAN OF THIRD FLOOR	
MADE BY A.L. / SCALE ¾"=1'-0"	DONN BARBER ARCHITECT 101 PARK AVENUE, NEW YORK CITY	DATE MADE AUG 1 1913

Typical title for use on scale and full size detail drawings.

CONTRACTORS MUST TAKE AND VERIFY ALL MEASUREMENTS AT BUILDING BEFORE MAKING SHOP DRAWINGS OR STARTING WORK

Stamp for all working drawings.

RECEIVED
AUG 4-1913
OFFICE OF
DONN BARBER

Stamp used on shop drawings.

APPROVED
DONN BARBER
ARCHITECT
PER C.B.P. AUG 4 1913

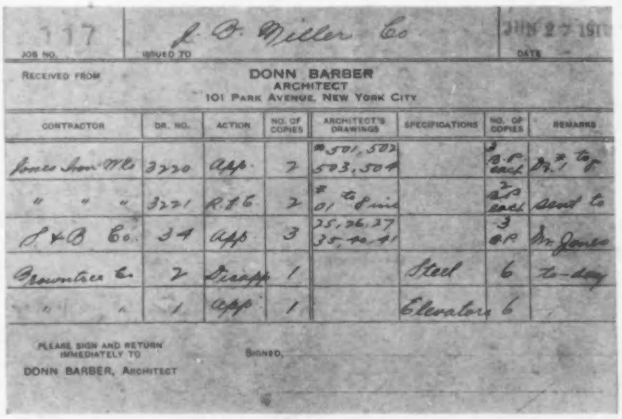
Stamp used on shop drawings.

HEADQUARTERS
YOUNG WOMENS CHRISTIAN ASSOC
52nd St. & Lexington Ave.

DONN BARBER ARCHITECT
101 PARK AVENUE N. Y.

AUG 4 1913

Stamp for sketches.



Receipts for drawings printed on mailing cards, 4 x 6 inches. This sample lists several drawings and specifications issued on one building at one time.

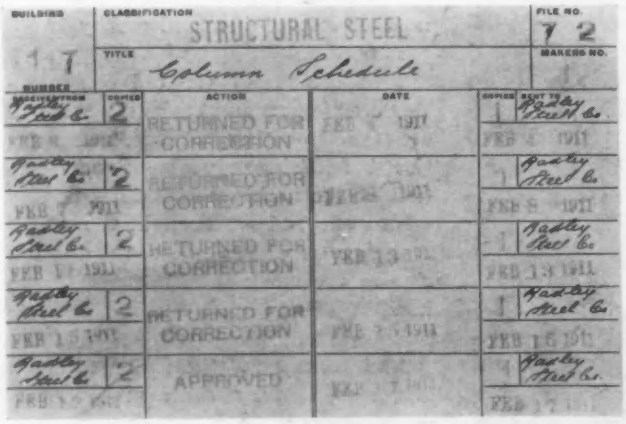
STRUCTURAL STEEL

OFFICE COPY

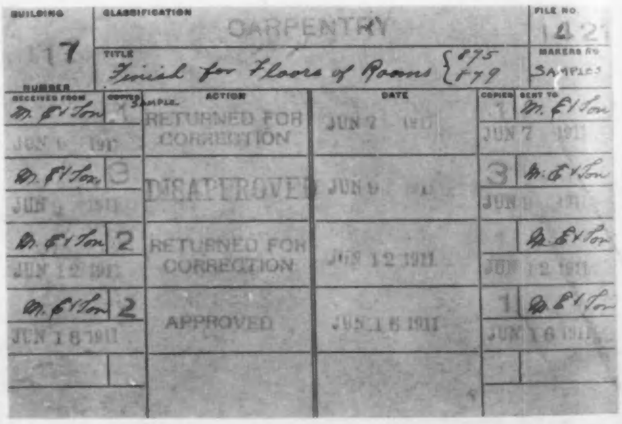
PRELIMINARY

CANCELLED

Miscellaneous office stamps.

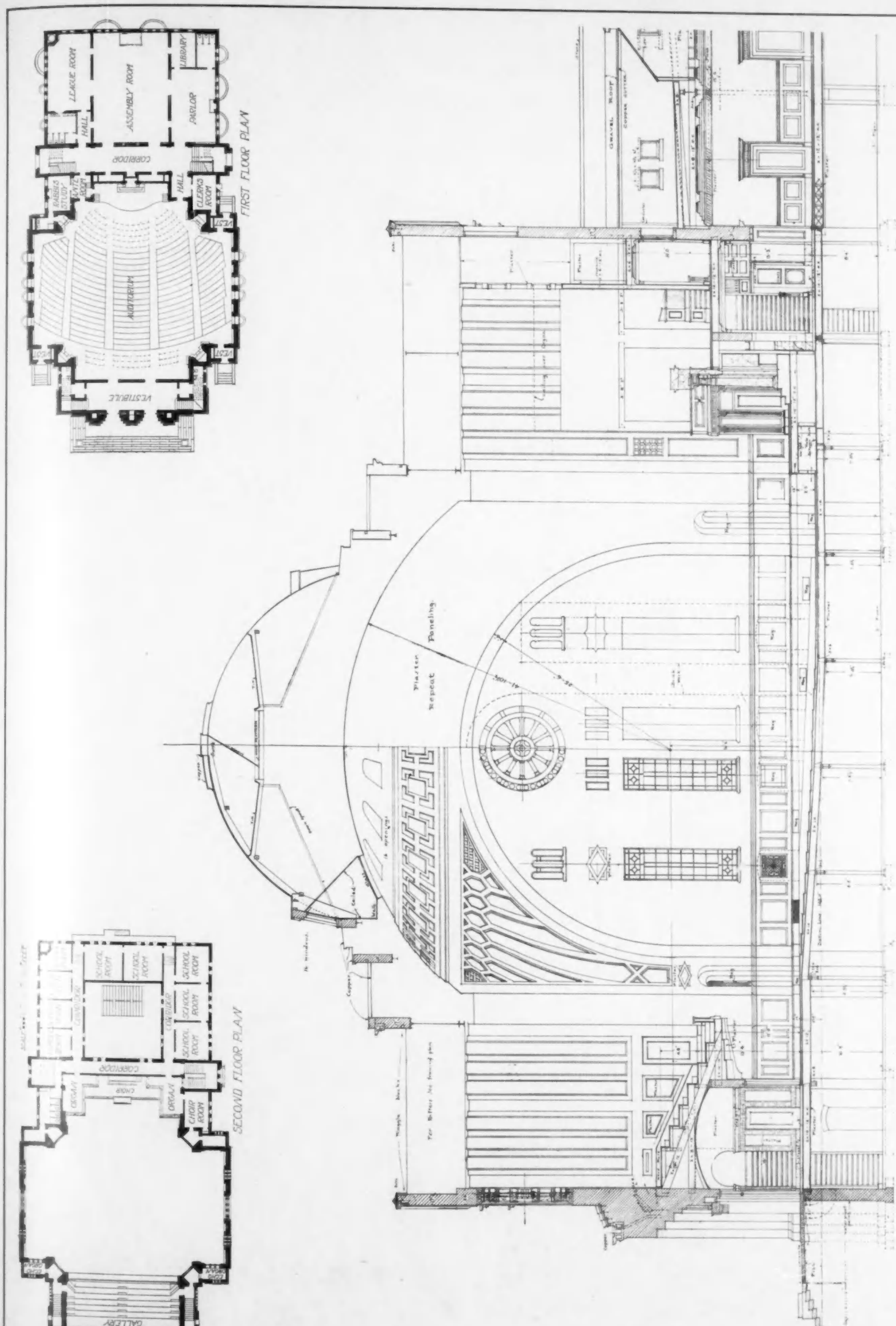


A filing card, 4 x 6 inches, is made for each drawing in the office, including each shop drawing. This card has eleven spaces, front and back, in which to record eleven phases of the history of one drawing.



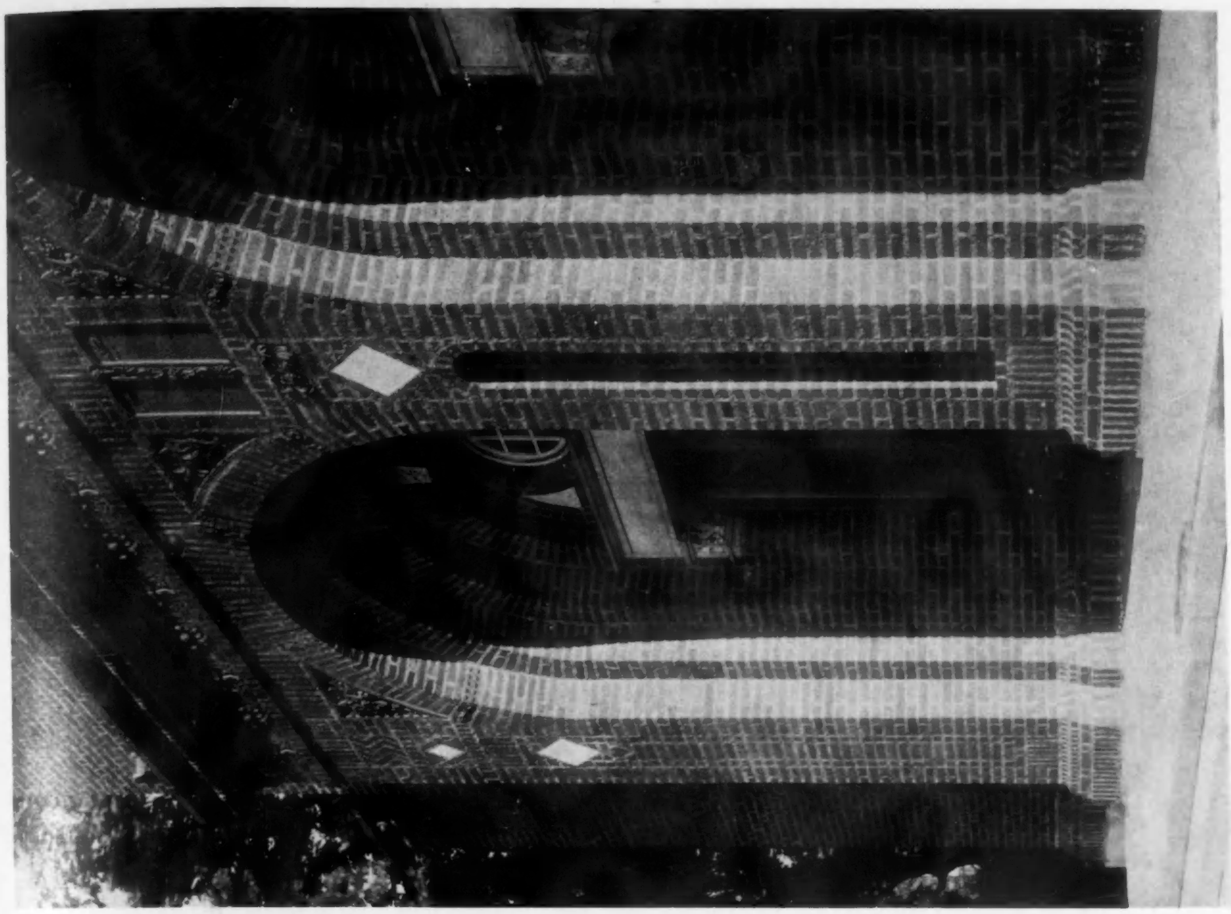
A similar filing card is made for all samples of material for work in hand. This card gives the history of samples of floor finish, submitted for approval on one building.

THE EUCLID AVENUE TEMPLE, CLEVELAND, OHIO
LEHMAN & SCHMITT, ARCHITECTS

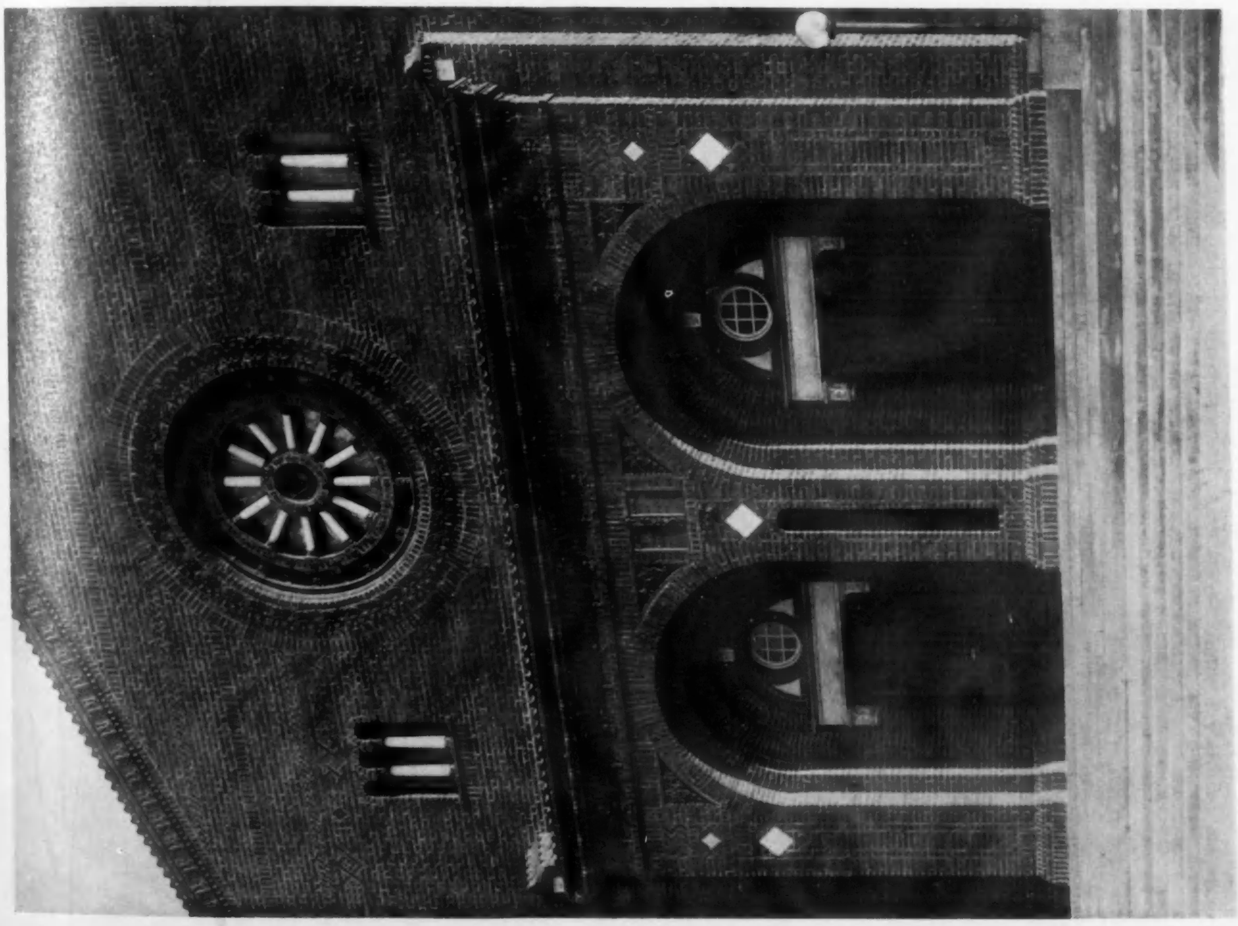


LONGITUDINAL SECTION.

THE EUCLID AVENUE TEMPLE, CLEVELAND, OHIO
LEHMAN & SCHMITT, ARCHITECTS

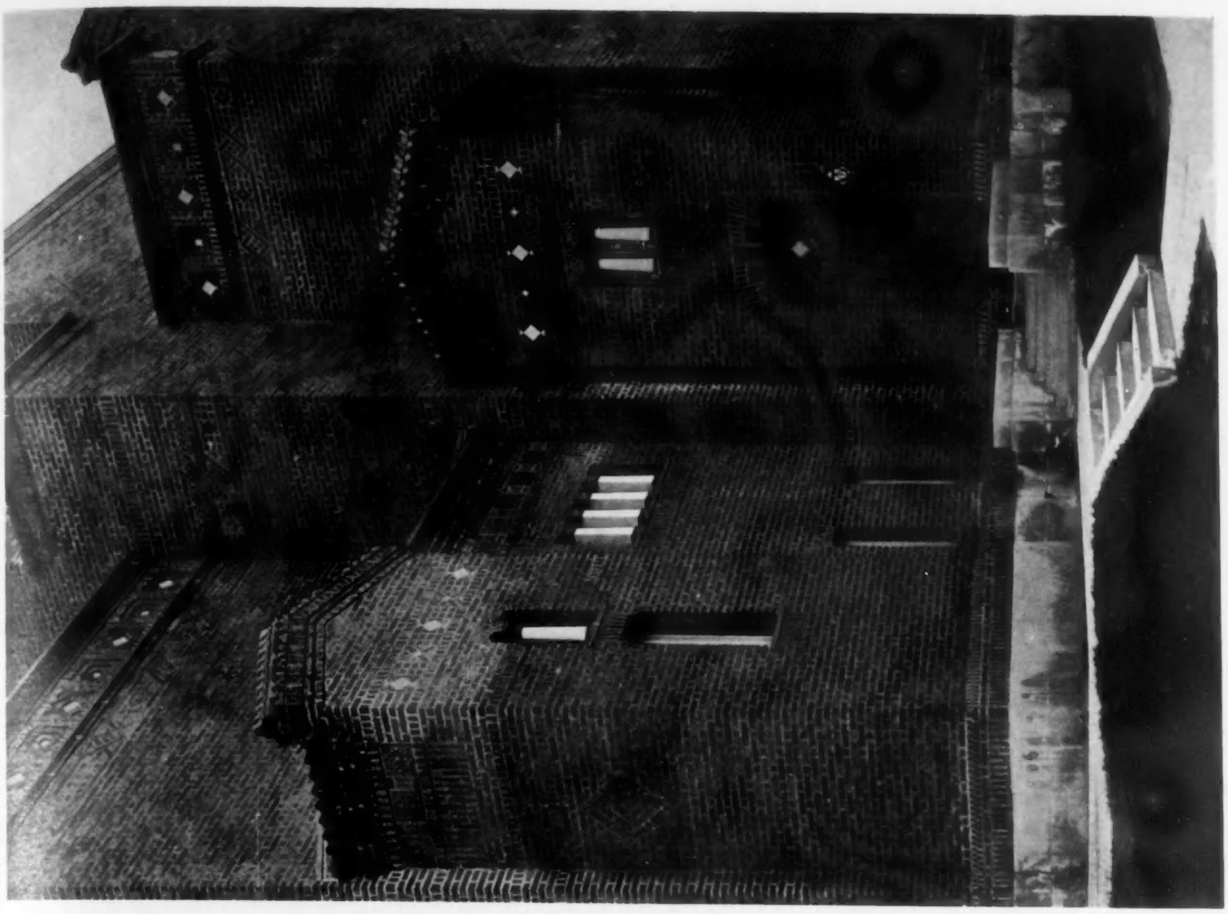


DETAIL OF ENTRANCE

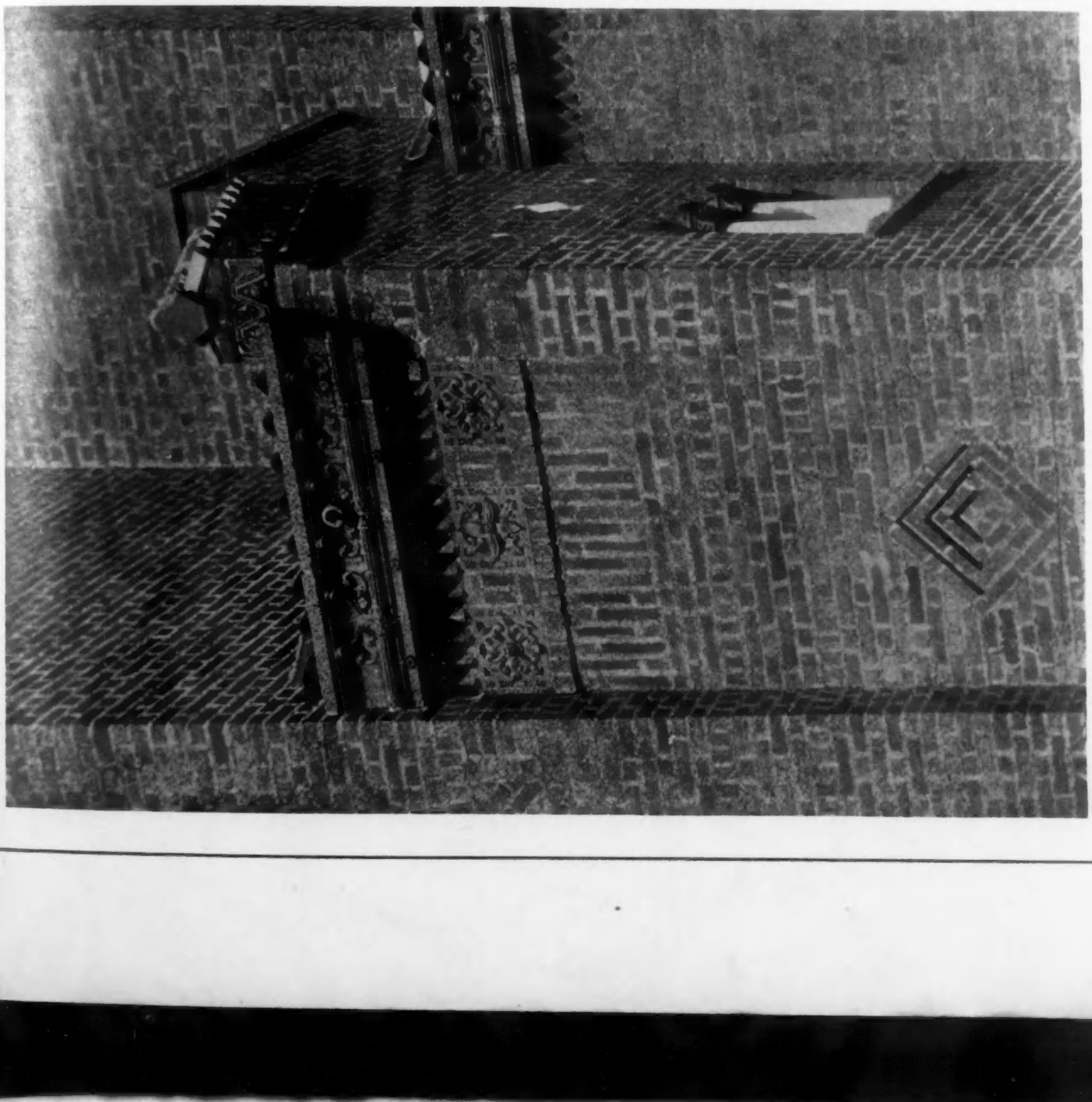


PRINCIPAL FACADE

THE EUCLID AVENUE TEMPLE, CLEVELAND, OHIO
LEHMAN & SCHMITT, ARCHITECTS



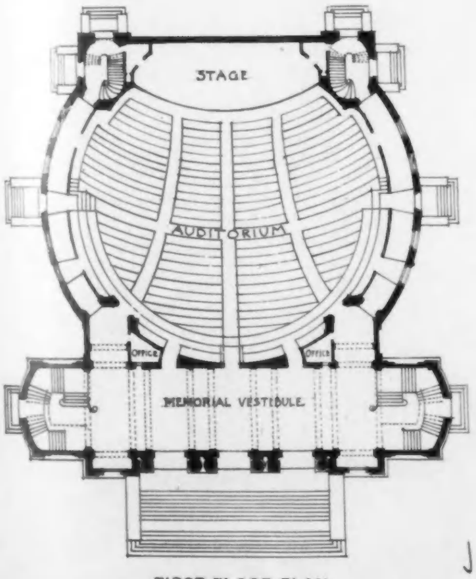
DETAIL OF SOUTHWEST ENTRANCE



DETAIL OF CORNICES AND BRICKWORK

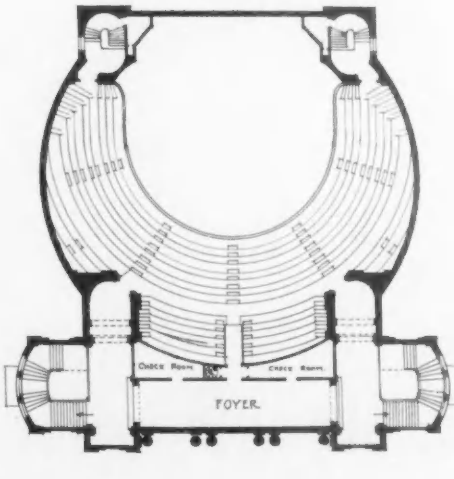
THE EUCLID AVENUE TEMPLE, CLEVELAND, OHIO
LEHMAN & SCHMITT, ARCHITECTS

PRINCIPAL ELEVATION



FIRST FLOOR PLAN

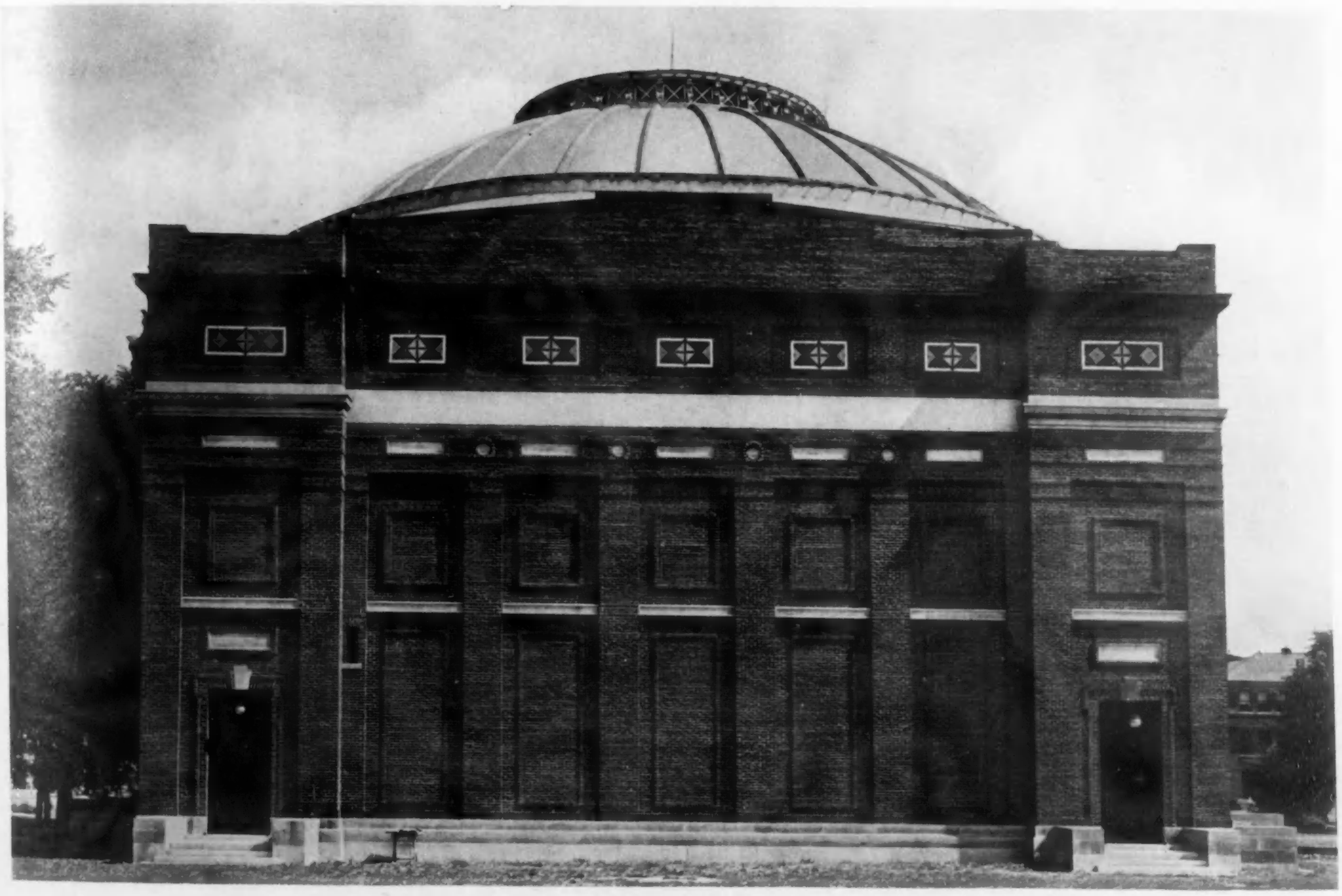
U of M



BALCONY FLOOR PLAN

AUDITORIUM, UNIVERSITY OF ILLINOIS, CHAMPAIGN, ILL.
C. H. BLACKALL, ARCHITECT

SIDE ELEVATION



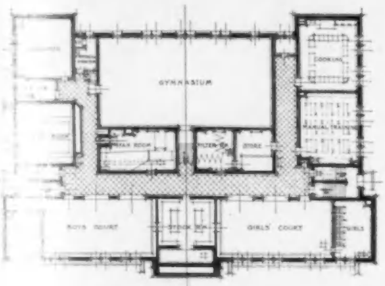
REAR ELEVATION

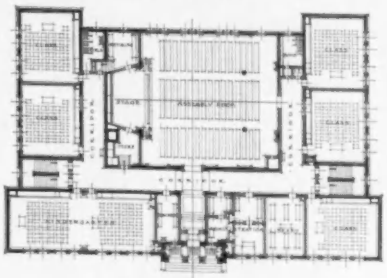
AUDITORIUM, UNIVERSITY OF ILLINOIS, CHAMPAIGN, ILL.
C. H. BLACKALL, ARCHITECT

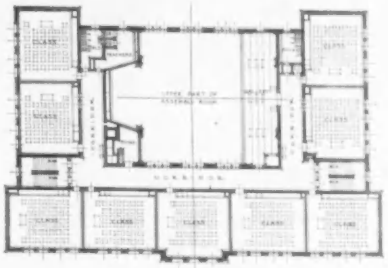
DETAIL OF CENTRAL PAVILION

RIDGE SCHOOL, NEWARK, NEW JERSEY
E. F. GUILBERT, ARCHITECT

ENTRANCE FRONT


BASEMENT PLAN

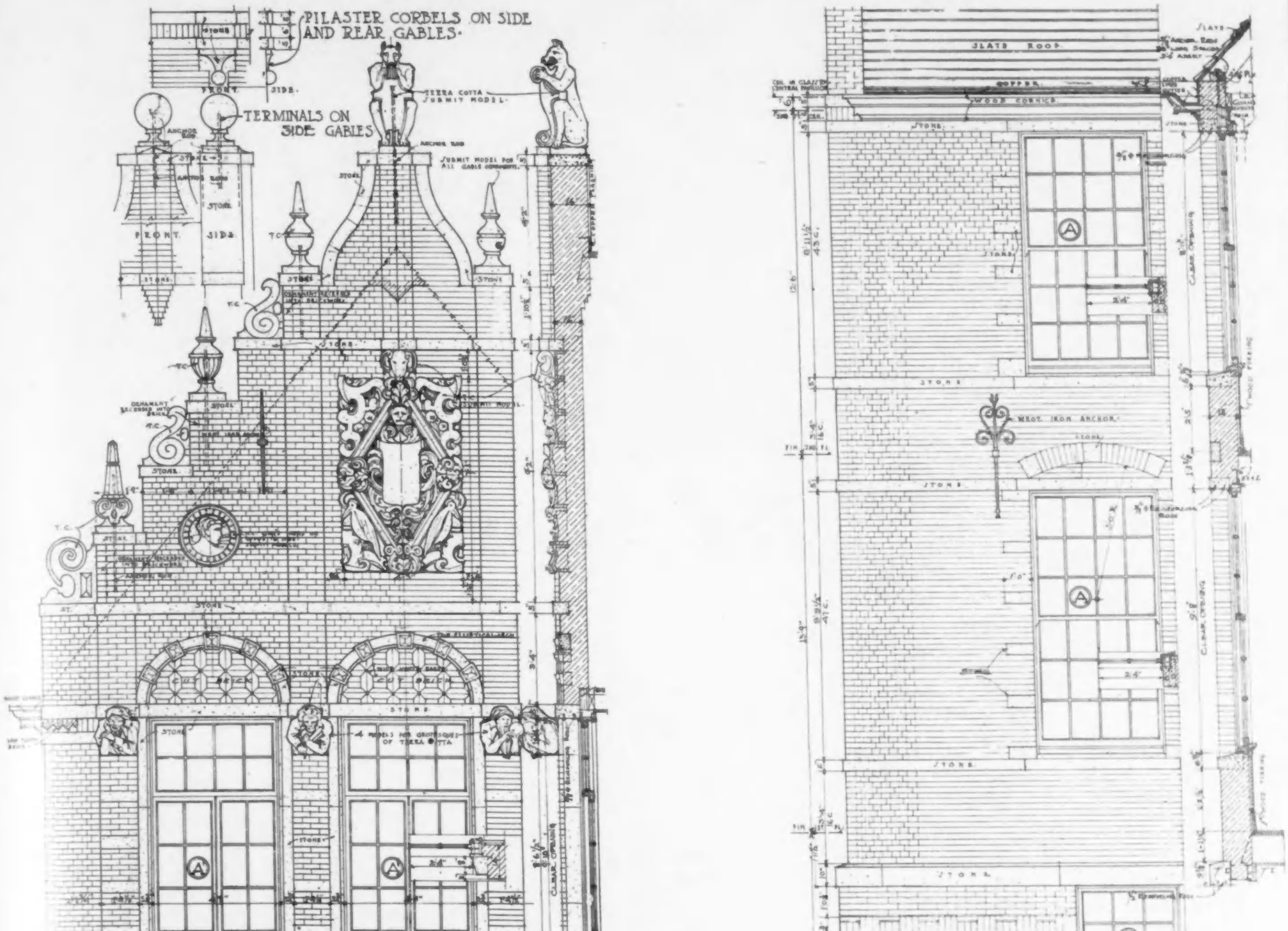

FIRST FLOOR PLAN


SECOND FLOOR PLAN

REAR ELEVATION

RIDGE SCHOOL, NEWARK, NEW JERSEY

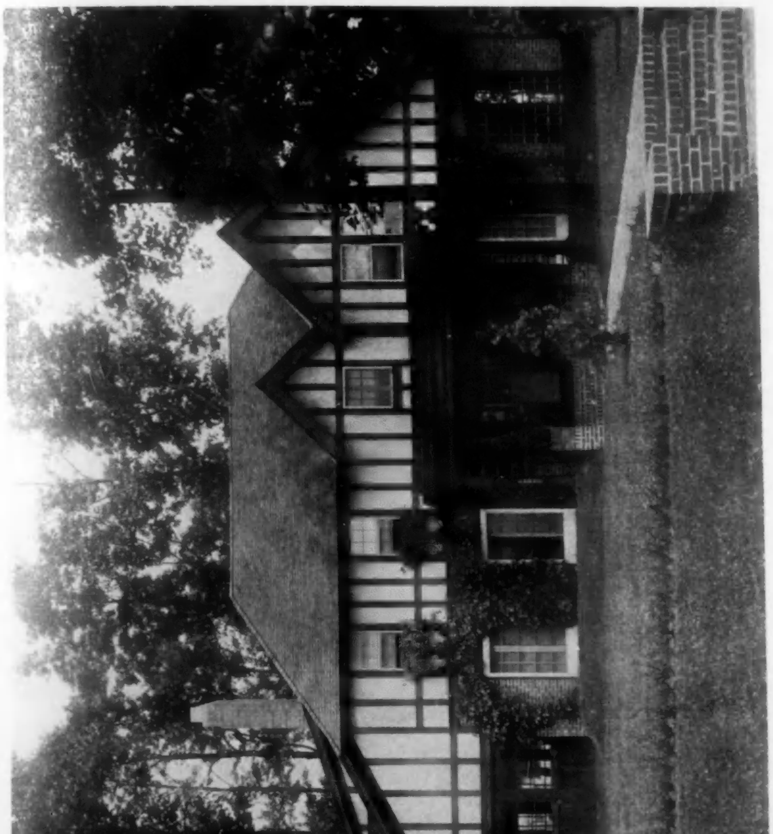
E. F. GUILBERT, ARCHITECT



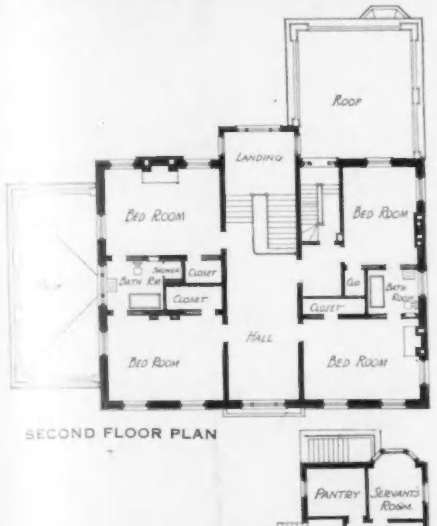
DETAILS OF CENTRAL PAVILION AND MAIN WALL

RIDGE SCHOOL, NEWARK, NEW JERSEY

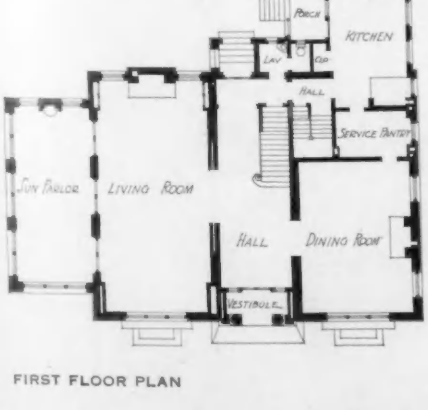
E. F. GUILBERT, ARCHITECT



HOUSE AT CLEVELAND, OHIO
FOUNTAIN & MORATZ, ARCHITECTS



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE AT COLUMBUS, OHIO
RICHARDS, McCARTY & BULFORD, ARCHITECTS

HOUSE AT HARTFORD, CONN.
LA FARGE & MORRIS, ARCHITECTS
ARTHUR A. SHURTLEFF, LANDSCAPE ARCHITECT

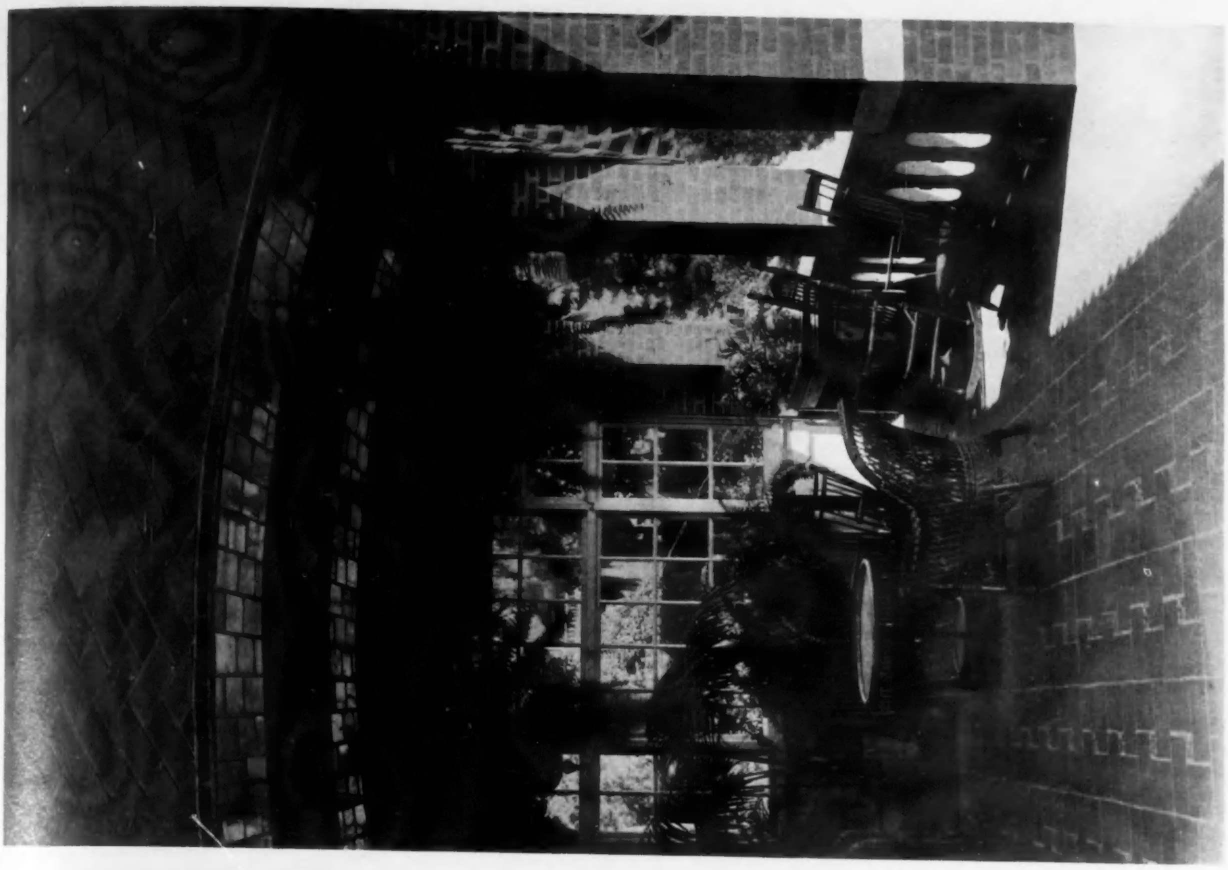
STREET FRONT

GARDEN

HOUSE AT HARTFORD, CONN.

LA FARGE & MORRIS, ARCHITECTS

ARTHUR A. SHURTLEFF, LANDSCAPE ARCHITECT



INTERIOR OF PORCH

ENTRANCE HALL

HOUSE AT HARTFORD, CONN.

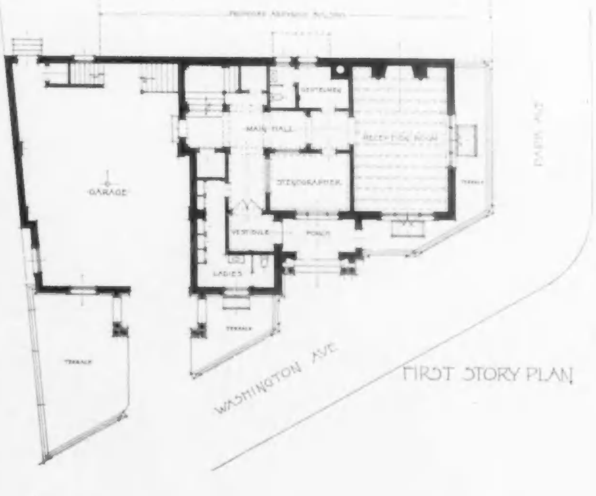
LA FARGE & MORRIS, ARCHITECTS

ARTHUR A. SHURTLEFF, LANDSCAPE ARCHITECT

GENERAL VIEW

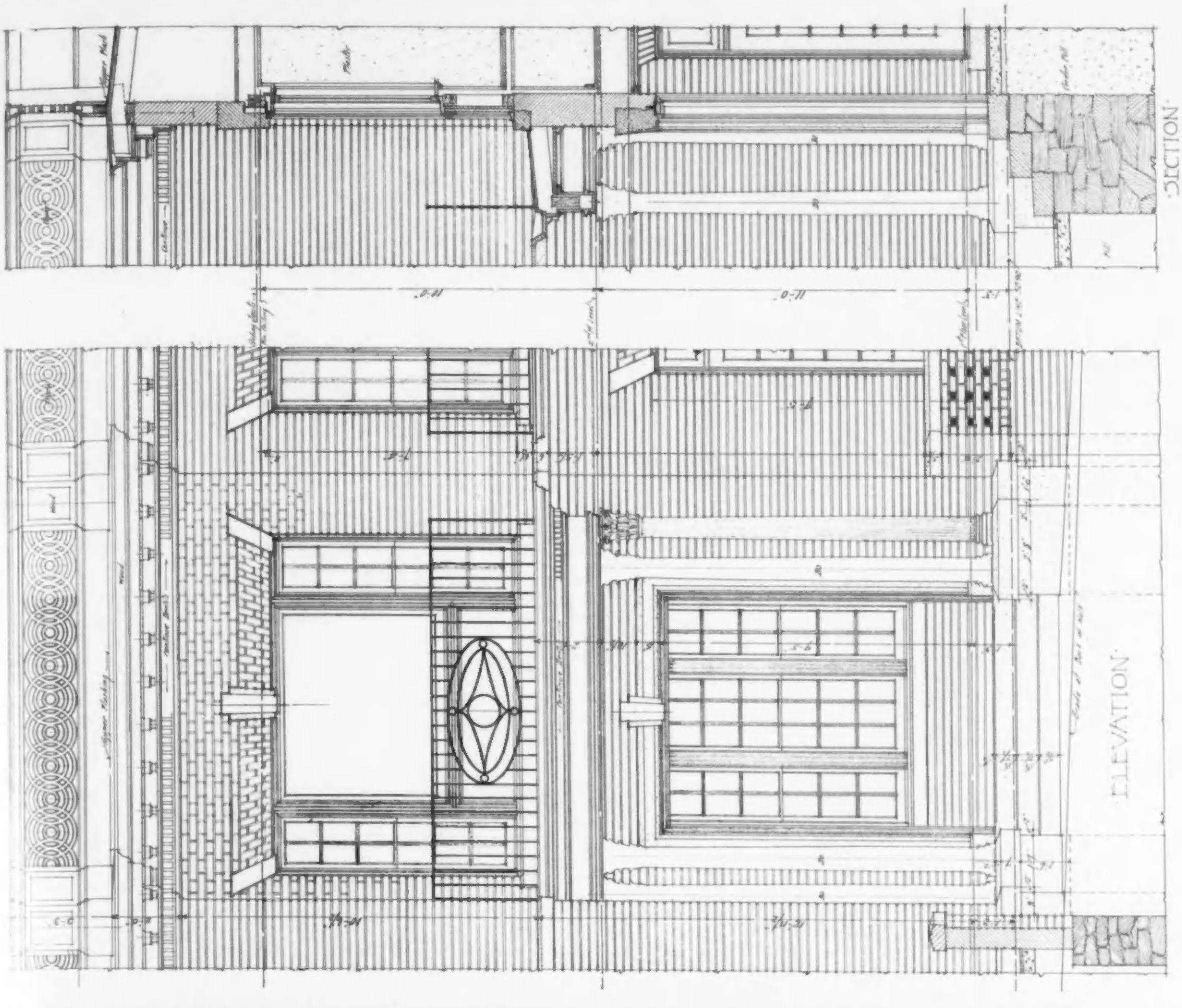
GARAGE ENTRANCE

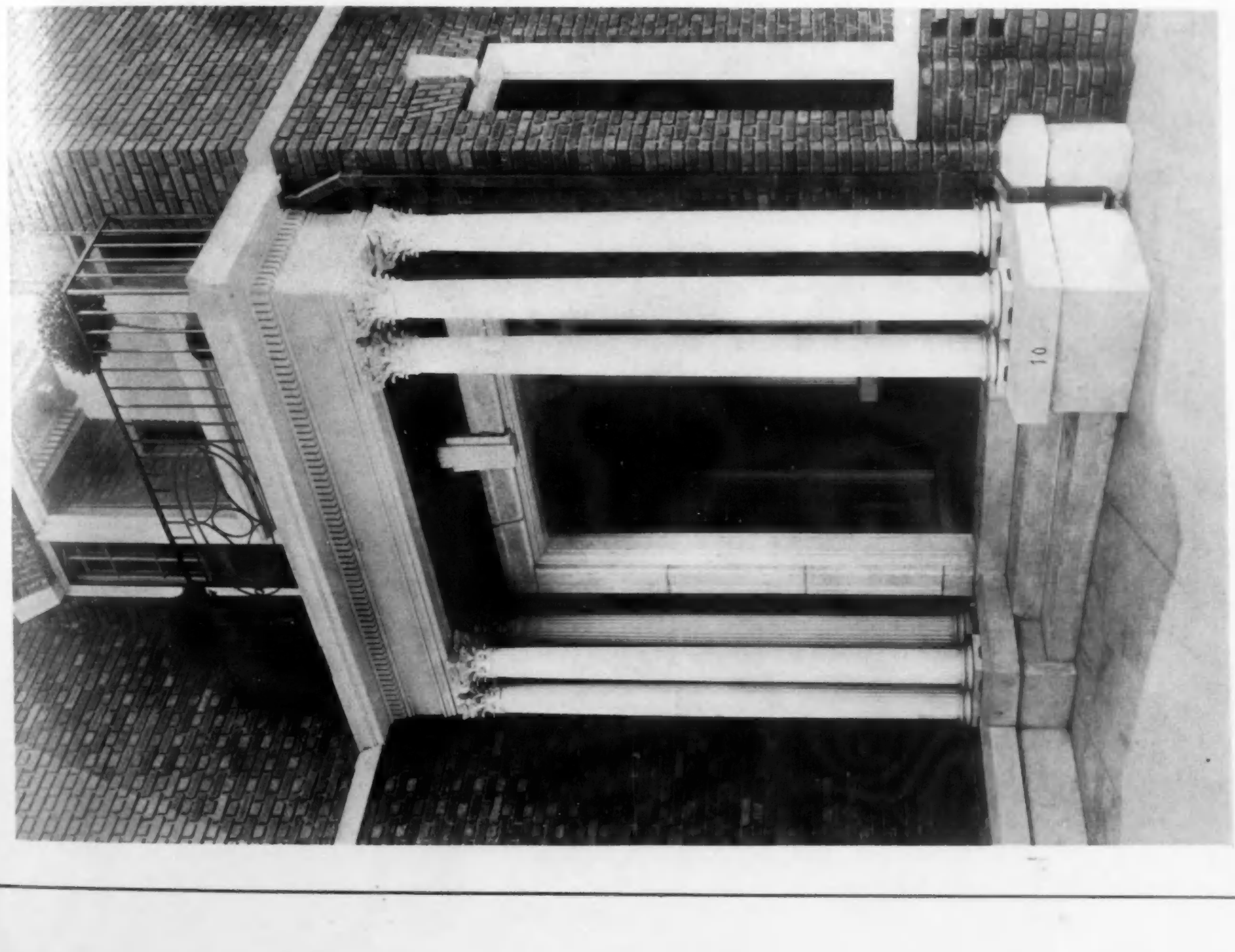
SECOND STORY PLAN



FIRST STORY PLAN

DENTAL OFFICE BUILDING, BRIDGEPORT, CONN.
SKINNER & WALKER, ARCHITECTS





DETAILS OF MAIN ENTRANCE

DENTAL OFFICE BUILDING, BRIDGEPORT, CONN.

SKINNER & WALKER, ARCHITECTS

Lattice–Its Use as an Architectural Embellishment.–Part II.

DETACHED ARBOR STRUCTURES.

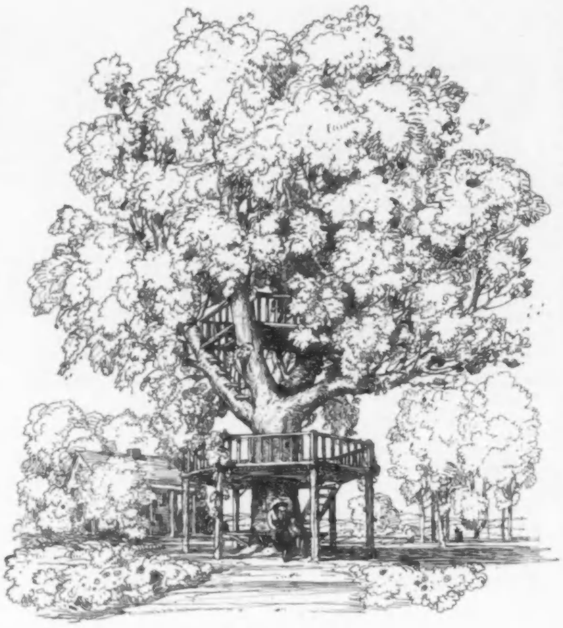
BY GEORGE S. CHAPPELL.

A NATURAL subdivision of that part of the field of design which the user of lattice has made his own is formed by detached structures such as arbors, summer-houses, well-coverings, etc., which decorate our gardens, both old and new, and by the more utilitarian and modern contrivances by which the architect of to-day masks the presence of the laundry-yard, service-court, or plain old fashioned "back-yard." It is, perhaps, in this department that the happiest results have been attained. In direct connection with the house, as in the case of porches or vine supports applied directly on the walls of a building, the designer is restricted both as to space he may occupy and style he may employ. In the case of these detached structures, however, there is an almost unlimited freedom for the play of fancy. The influence of surrounding wall surfaces or strictly architectural detail is hardly a factor, granted, of course, that a general propriety of treatment be observed.

AN OLD WELL-COVERING.

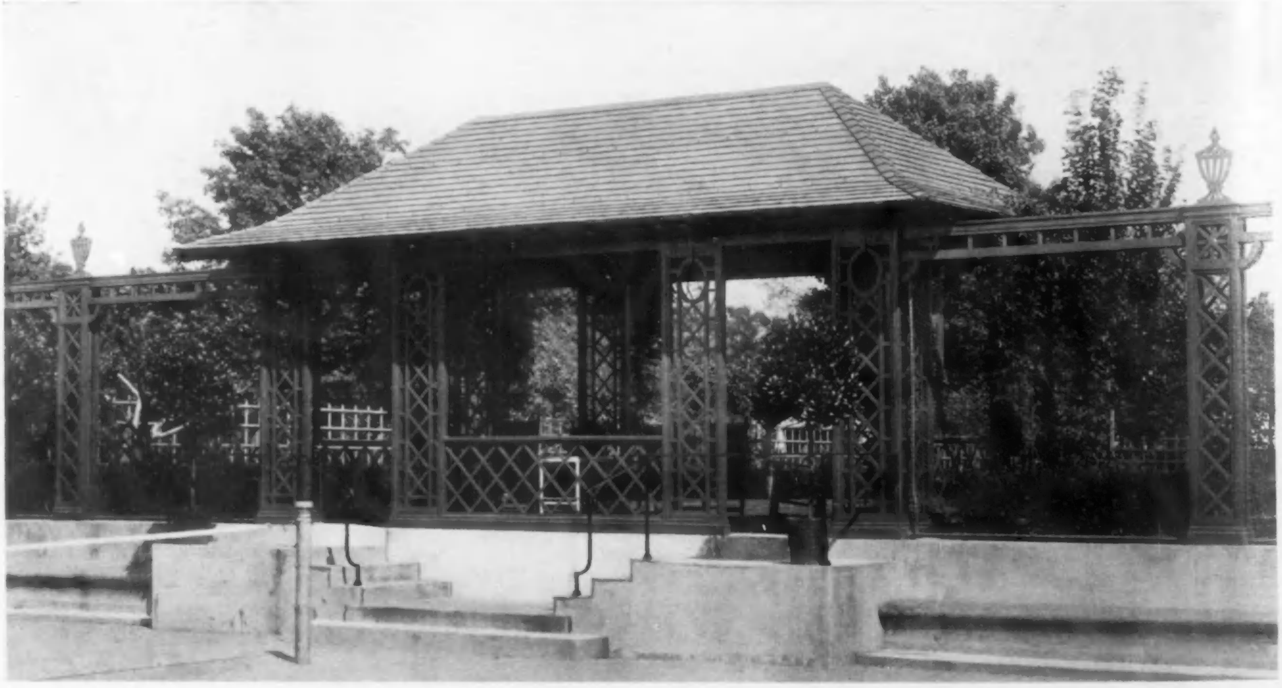
The architect, or more commonly the carpenter, of Colonial days, felt the freedom which the playful pursuits of the garden offered him, but with his ingrained chastity of artistic impulse stopped short of the fantastic or freakish. He did not thoroughly cover the field into which he might have strayed, probably because he was too busy with the realities of wringing a living from the stern fields of his adoption. In the matter of entrance gateways, for instance, there is a singular paucity of material. Here was a problem which should have given rise to many lovely solutions. The actually executed results are few and far between. One may travel a day's journey through the coast towns of Massachusetts or under the elm-shaded streets of Connecticut river villages without finding more than a handful of instances where the builder has attempted anything more than a pair of severely simple gateposts flanked by a fence of the most uncompromising spikiness. There are beautiful gateposts, too, but very few with lattice treatment—at least so it would seem to me, and I have looked long and patiently for them. The arched trellis, double, perhaps, with shallow seats on either side, the gate itself with the contrast of upper and lower panel, the treatment of the abutting fence—these are the elements in one of the smaller problems of architecture which should inspire and receive more attention than it has been accorded as yet. In our Southern cities, notably Charleston, S. C., we find more serious attempts to make gateways attractive, but unfortunately the entire development of Southern Colonial architecture was opposed to anything as simple and naïve as lattice work. In its lowest and most natural state the early Southern architecture found its expression in the shacks of the negro—straightforward, simple buildings without ornament. These were habitations built by one race for another, homes without the informing instinct which shows itself so clearly in the work of men building for themselves, for their own personal wants. It is a selfish law, but as fundamental as human nature, that man will not, because he cannot, put his deepest, strongest efforts into aught but what is to be his own. At the other end of the scale in the South stood the wealthy slave-owner. What an interesting comparison it is between the stately homes of the well-to-do merchants of Salem and Portsmouth and the equally stately but far less personal dwellings of the corresponding class along our Southern shore. Something in the warmer climate, in the enervating, lazy atmosphere of a life where the master had a hundred hands to serve him, seems to have sapped the vitality of even the most successful of the "big" houses of the South. They are dignified, they have style and "the grand air," but it is a borrowed dignity, a lifeless style, a languid beauty. In the severe adaptations of Bulfinch

and Latrobe, there is not the slightest trace of playfulness or amusement. We find practically no examples of lattice work; there is no place for it in an architecture of wood pompously proclaiming to all the world that it is stone. The nearest approach to a lattice treatment which one finds is in this very matter of gateways, which has suffered from Northern neglect. The Southern entrance was more an affair, the old gardens were more closely walled, and ingress and egress, particularly of "carriage folk," were masked with a certain splendor reflected in the high-posted gateways of old Charleston. But even here the architectural forms are but a borrowed application of the familiar English iron work, which went with the stone forms of the great manor house itself.



TREE LOOKOUT.

We have again to turn to the master-builders of New England to find the flower of our garden art expressed with raciness and native originality. It is in the old gardens of Salem, Portsmouth, and Danvers that we find the most charming conceptions, — quaint, logical, personal, unaffected — all that a real garden adjunct should be. Take, for example, the fine tree "lookout" suggested in the drawing herewith. What a charming idea it is to build up a human nest into the embracing branches of some friendly tree — what possibilities it suggests! Hardly a country place of any size but boasts some accommodating growth about which, at a ridiculously small expense, can be built a veritable palace of delight, — a wandering maze of substantial open-tread stairs leading to specially designed landings, where the girl may have her dolls, the boy his secret treasures, and the *pater familias* his book and pipe among the apple blossoms of May. Should a tree of fairly large spread — an oak, a low-growing elm, or even a big apple tree — be available, it is certainly to be hoped that a common meeting-ground will be included in the arborial architecture. I remember no luncheon to compare in its environment to that enjoyed years ago in the top of an old tree in Concord, Mass. While the memories of Paillard's and Durand's have paled or merged in the common remembrance of good things gone by, the memory of that hour among the branches remains clear and distinct. Try it, you epicures, who happen also to be lovers of nature. It is worth while! It seems hardly necessary to suggest that of course any woodwork used in this way should be either painted a neutral tone or allowed to weather to the silver gray of the tree-trunk itself. From the tree-house to the more formal summer-house we descend from the heights of the highly poetic to the plane of middling sentimentality so cherished by our elders: a plane of substantial firmness, upon which could be founded with perfect safety the light structures of their imagination. These



LATTICE SHELTER AND SCREEN SURROUNDING TENNIS COURT.
Bigelow & Wadsworth, Architects.

were to be the theatre of that safe and sane romanticism by which our grandmothers were won — victories usually preceded by a serious hour with the fair one's stern father and severe mother, where at divers practical matters of dower and maintenance were, likely enough, shrewdly discussed in the old gentleman's study, whence the keen old eyes, later peering through drawn blinds, watched the duly certified suitor crunching amorously down the garden path. Was it for this, I wonder, that the old-time shelters were so often set at intersections of main axes, or on the main line of observation, as in the example shown from the Robinson Garden in Salem. Personally, from both logical and sentimental considerations, at least from the younger man's point of view, I conceive an ideal location for the summer-house to be not at "the focal point of a congested civic center" — phrase dear to our professors of theory — but in the isolated bosquet at the end of a winding walk — the further away the better, a terminal, not a way station. In this phase of garden architecture, too, it seems as if we had stood still, if not actually retrograded. There is little or no movement in the summer-house market at present. Perhaps now that most of our millionaires really live in the country, there will be a renaissance of the little Chalet-de-Bois, which gives the cool, after-tennis drink so delicious a flavor. But the summer-house has only been developed as far as the simple rendezvous. Beyond lie visions of delightful possibilities, — game rooms, lattice mazes, and the like. It is one of the dreams of my life to find a client who will commission me to build a tiny open-air ball room with a stage and the dependencies of capsule drama.

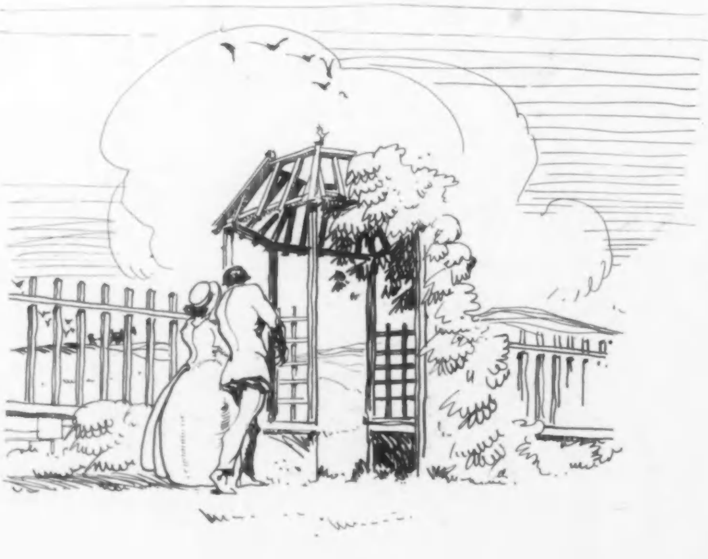
LATTICE GATE.
Carrère & Hastings, Architects.

Try as I will, I cannot avoid saying a word about the pergola — a name which has been made to stand for so many crimes that it has become to me a hissing and a reproach. So terrible, indeed, did this pest become that one of my architectural confrères exclaimed that he had actually taken out pergola insurance against it; and surely we must admit that the gravity of the situation condones the cry of distress. There was a time, happily past, when no home was complete without a pergola. Every age has its architectural hall-mark. We have passed through the successive periods of wooden battlements, curved mansards, neo-grec columns (so near and, yet, alas, so far!) baronial towers — who of us now in our middle age does not recall yearning for a home with a tower? — down to the yesterday of the Italian pergola. The carved beam-ends and the fat columns of this delightful shade and shelter were applied with unsparing hand to houses and gardens of the most diverse character, regardless of appropriateness and beauty. The details of its construction have crept insidiously into the very

LATTICE TREATMENT OF THE INTERIOR OF A PORCH.
Bigelow & Wadsworth, Architects.

architecture of the house itself, and it is no uncommon thing to see these same projecting beam-ends used with a solid roof to form the cover of a piazza, or even hoisted hundreds of feet in the air, on the roof of a club or restaurant, to carry a thrilling burden of artificial wistaria or dusty, city-bred ivy. It is with such deceptions as these that architects fool themselves and befuddle the public, creating a taste for a meretricious and imitative art which is fundamentally wrong. If we look once more to the older models, we will find in the arbors of our New England gardens the perfect simplicity and appropriateness which shine like white light through the years, coming long after the over-educated and fruitless attempts of the French court gardeners to introduce the world of play-gardens into that of real architecture and equally long before this later attempt to graft the simple expression of a vineyard necessity upon an entirely foreign architectural life. It is difficult at close range to say just what the predominate feature of a period is — just what distinguishes us or will distinguish us from the periods just before or after us. If one may hazard a guess, however, I should say that whatever the particular detail may prove to be, it will be found to be closely related to the general return to the older and simpler forms of architectural expression which is undoubtedly at present in full swing. And of the details of this return to simplicity I can think of no more uniting link, no factor more common to all the subdivisions of the subject, than the use of lattice, which finds its application not alone in connection with the severe wooden houses, but also with brick, stone, stucco, or what you will, so long as it is honest and straightforward and intimately connected with the out-of-doors. I have no patience with the modern and very smart attempts to use lattice for interior purposes, to make it do things for which it was never intended. No matter how successful the result may appear to be — and we can all call to mind instances where it would seem to be the last word in chic — I cannot help feeling that the same, no, not the same, a better, result could have been secured in another way and by more legitimate means. If these slight considerations of the subject will make for its honest use, they will have a real excuse for existence.

OLD COLONIAL GARDEN HOUSE.



The Masonic Temple, Camden, N. J.

HEACOCK & HOKANSON, ARCHITECTS.

THE sympathetic use of architectural terra cotta and brick used in happy combination is again demonstrated in the recently erected Masonic Temple, Camden, N. J. Here the architects have frankly used terra cotta in place of other materials because it seemed to them best to express the needs of this particular problem.

Temples should be dignified and imposing structures, no matter how small, and examples of good, sound construction, no matter how inexpensively they must be built. There is no type of building whose traditions hold for it a better right to the employment of the Classic styles, or even seem to demand it, than the Masonic Temple, and this is even further encouraged by the extent to which we are to-day using Greek and Roman precedents generally in architecture. There should also be a certain air of exclusiveness, massiveness, and strength without sacrificing refinement and beauty. The Greek temple is the one type of building which embodies all these characteristics. However, in using it as the best expression of what we desire in our Masonic Temples, it is necessary to make a plan which satisfies the demands of modern requirements and to use the structural material which will bring the total cost of the building within the amount appropriated for its erection. The selection of architectural terra cotta and brick was the logical choice. These materials were economical in cost and filled all the requirements of architectural character and structural stability. With the plastic quality of architectural terra cotta it is possible to get a great richness and beauty of detail, which, except in very few instances, would be quite prohibitive even if stone could be used. While architectural terra cotta has a distinctly individual character, it can be made to express, in its own way, the dignity and simplicity we so desire in buildings of this character. The fact that architectural terra cotta is so much more fireproof than stone is again no small factor in determining its employment. It may also be well to say here that in this special instance the building committee objected very strongly to the use of stone on account of the darkening effect the atmosphere has upon it in that vicinity, this objection being caused by the appearance of stone buildings in the neighborhood of the proposed site for the new temple. By the use of architectural terra cotta and an impervious brick it was satisfactorily proved to the members of the committee that they could have a material which would be impervious and which could be easily cleaned.

ENTRANCE DETAIL.

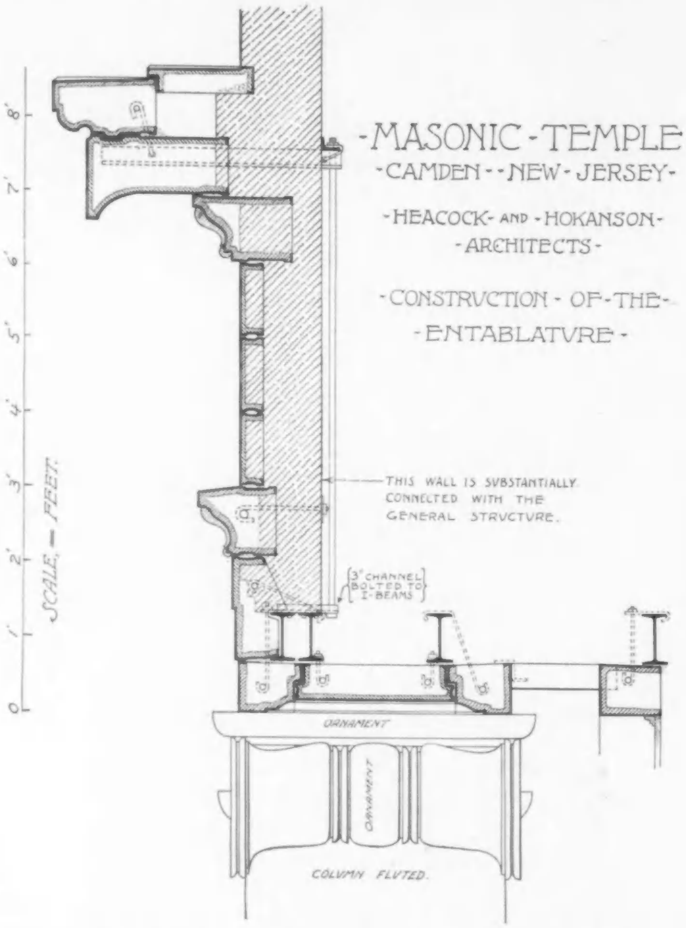
In the case of the new Camden Masonic Temple a light buff unglazed terra cotta with surface tooling was used. It was found that with the tooled surface a certain texture was obtained, which brought it more in harmony with the brickwork and which prevented the appearance of any unevenness in the flat surfaces. While in most instances this is not objectionable,

here, where the effect of strength was desired, the tooling was resorted to with success.

One feature in handling the architectural terra cotta was the elimination of visible vertical joints in the columns. The size of the columns required that the drum be built up in eight pieces, but, by making a double break in the fillets and placing the joint in the internal angle of one of these breaks, each drum has the appearance of being a single piece, so that the horizontal joints only are visible. The columns, which are thirty-four feet high, rest upon a granite base nine feet in height. This high base gives a desired feeling of privacy and seclusion, and with the spacing of the columns and the fenestration completely obviates the danger of its having a bank character. The intercolumniation is quite successful, the columns being placed close together, with the central bay made wider to accommodate the wide entrance demanded. Set close to the curtain wall in back, they give a most satisfying feeling of strength and repose. The wide flanking piers contrast well with the light and shade of the colonnade and add to the simplicity and massiveness of the whole.

Besides the fluting of the columns and the Ionic caps, the architectural terra cotta is enriched with decorated mouldings in the cornice and architrave and wreaths encircling Masonic emblems in the frieze. The latter, with the symbol over the main entrance, are the only external evidences of the purpose of the building. The cornice is extremely simple and effective and is carried around the sides of the building past the first bay. The high parapet receiving the roof in back gives the right proportion of wall surface above the columns. A sense of protection is given to the entrance by the break in the high granite base, while the wide architectural terra cotta trim gives it importance in the composition. Small windows above the entrance light the committee rooms in the second story mezzanine, while the screened windows directly under the entablature, lighting the second story hall, add richness and character to the building.

The brick selected for the body of the building was a light impervious brick to match the terra cotta and laid up with thin joints to give an evenness of surface and tone, thereby gaining in massiveness and solidity.



DETAIL SHOWING CONSTRUCTION OF ENTABLATURE.

The same brick is used throughout the exterior of the building.

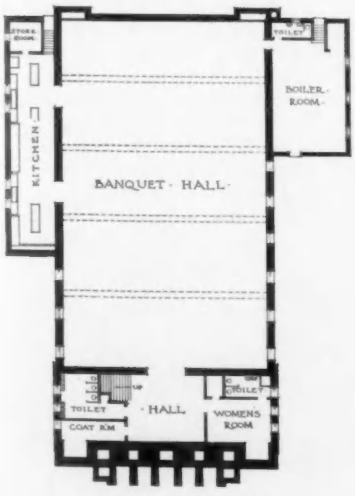
In plan, the building consists of a high basement, two main or lodge room floors, and two mezzanines for committee rooms, armory, lantern rooms, etc. The entrance hall is placed three and one-half feet below the level of the first floor, to make fewer steps on the exterior and to give a higher ceiling. The large room in the basement, measuring approximately 60 x 100 feet, will be used for banqueting and drilling purposes. Two wings made possible by the shape of the lot take care of the kitchen and heating plant.

The first floor is to be used by the higher Masonic bodies, both because it is more convenient to the basement for drilling, and because it required more floor area than the second floor. This additional area was obtained by building the platform of the large lodge room out over the kitchen wing. In the mezzanine of the first story are two committee rooms reached by the main staircase, a large armory, galleries, and lantern room. The second floor is given up entirely to one large Blue Lodge Room and its accessories. The lobby on this floor is especially fortunate in its size and proportions.

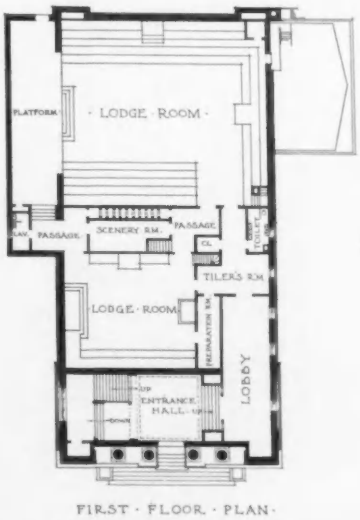
At present the interior walls are left in white plaster finish with very simple plaster cornices and bands, the woodwork being a light brown fumed oak except in the upper part of the lodge rooms, where it is painted white.

Set well back from the curb, and somewhat further back than the adjoining buildings, one comes upon the Temple quite suddenly. The first impression is one of massiveness and strength, a much larger scale being obtained than it is possible to realize from the accompanying illustrations.

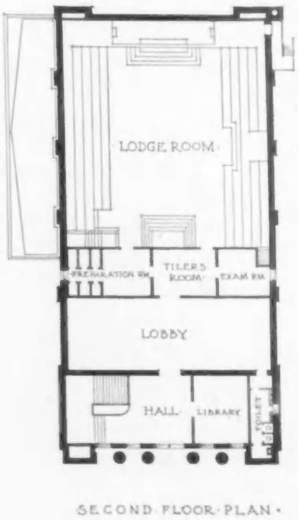
This building, although simple in design and appointments, possesses that character which we naturally associate with a building intended for the home of any mystic order. It is also a visible proof that a structure with a feeling of dignity and reserve can be obtained by the use of less pretentious materials than those which have long been associated with buildings of monumental design, and it augurs well for the future of design in this country that imposing architectural effects can be obtained at less expense and with materials which are more capable of expressing the ideals of modern American life.



BASEMENT · PLAN ·



FIRST · FLOOR · PLAN ·



SECOND · FLOOR · PLAN ·

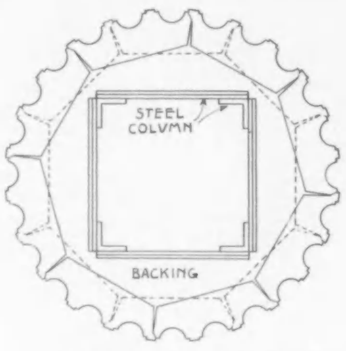
MASONIC TEMPLE, CAMDEN, NEW JERSEY

HEACOCK & HOKANSON, ARCHITECTS

Only by attempting new things is progress to be had, and the saying, "Nothing ventured, nothing gained," is as true in architecture as in other instances.

If we are to preserve the beauty of classic forms to future generations it is evident that much thought must be given to the use of new materials, which will retain faithfully all the pristine glory of the early examples, for in this age of excessive building costs, the opportunities for constructing monumental buildings with the materials in which they were first conceived are becoming less and less numerous.

It is equally certain, with our present architectural limitations in design, that the classic building must continue to furnish inspiration for the design of our more important buildings, for an architectural style has yet to be developed which can more completely express the functions of a public building.

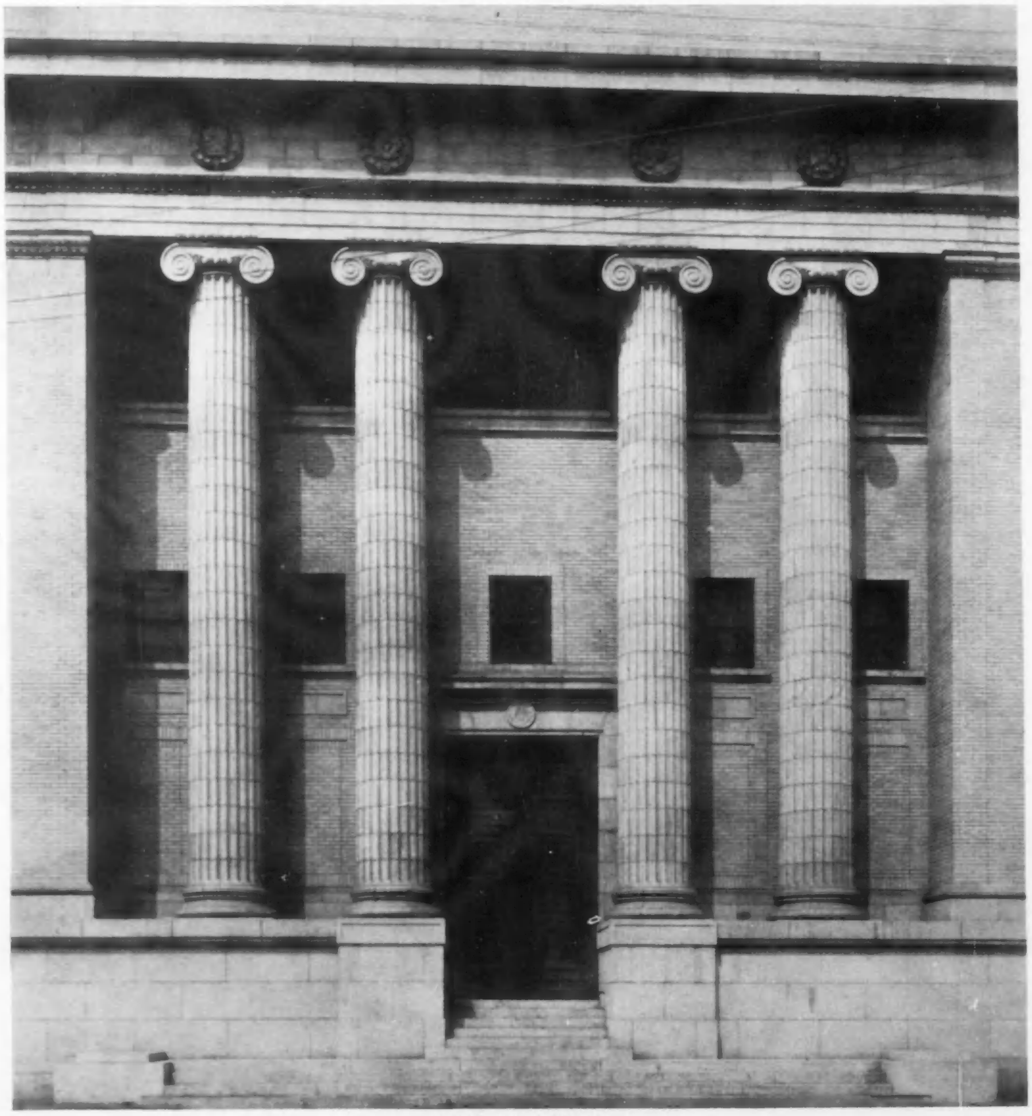


CONSTRUCTION OF COLUMNS.

There are many instances where classic forms have been expressed in materials other than stone or marble, and the progressive architect seeing the need of new forms and materials is not entering a barren field nor attempting an impossible task, for the many illustrious examples which can be readily called to mind should provide ample precedent.

The successful buildings point clearly to terra cotta as the promising material and one in which are latent possibilities that are only waiting further development. The great possibilities in the use of color, which is only one of the many striking advantages of the material, should provide a fascinating enough reward to stimulate large efforts.

If the examples already in existence will be taken for models to be further developed, and if each successful design will encourage further endeavor, then architecture will indeed be a living art.



DETAIL OF FACADE
MASONIC TEMPLE, CAMDEN, NEW JERSEY
HEACOCK & HOKANSON, ARCHITECTS

Architectural Jurisprudence.— Part V.

THE ARCHITECT IN MUNICIPAL WORK.

BY WILLIAM L. BOWMAN, C.E., LL.B., OF THE NEW YORK BAR.

IT IS natural that municipal work should have a charm and fascination for the ambitious architect. There fame and fortune seem to be combined. For what more could one ask? Yet those attracted by such work must not forget that the larger the rewards the greater the dangers. With that fact admitted, let us ascertain and know the dangers of this class of employment and if possible ascertain how best to cope with them. Our considerations will not, of course, be applicable to those salaried architects who are usually protected by civil service.

Although, strictly defined, municipal work would not include government or state work or their boards or commissions, yet we will briefly consider such employments. However, let us first take up the strict municipal work for cities, counties, boroughs, villages, school districts, etc.

BEFORE CONTRACTING. A municipal corporation is a legal body created by an act of legislature and as such its powers and actions are governed by the United States and state constitutions and by its charter or the act creating it. For example, where a city is authorized to act only by ordinance, and where an architect was employed pursuant to a resolution, it was decided that the architect could not recover from the city even after the services were performed. From this we can formulate our first rule for procedure: *Know that the municipal corporation is acting pursuant to the law creating it.*

Probably every state constitution, or at least every act creating a municipal corporation, fixes a limit for its indebtedness. Such limits are strictly adhered to, and attempts to evade them are not ordinarily successful. In a late case a city tried to contract for a public improvement by providing for payment in yearly instalments after yearly levies. It was held that once the contract was signed that created an indebtedness, and if the contract price added to other indebtednesses exceeded the constitutional limit, such contract was null and void, and no recovery could be had even for work done or services rendered beyond the limit. Hence our second rule reads: *Know that your contract does not cause the indebtedness of the municipality to exceed its constitutional or statutory limit.*

Some states and most municipalities have statutes requiring that all public work above certain small amounts shall be contracted for with the lowest bidder, etc., after due advertisement. Generally speaking, such requirements are not considered applicable to contracts for architects' services, but such is not a universal rule as is shown by the fact that a county used this defense a few years ago to prevent an architect from collecting his compensation for services rendered and accepted. How can any municipality expect to get satisfactory and first class architectural services by advertising and awarding to the lowest bidder? Undoubtedly the trend of opinion is against such a method of employing professional services. Past experience, at least, then gives us the third rule: *Know that your contract does not exceed a limit above which advertisement and acceptance of the lowest bidder is required.*

Many of the acts incorporating municipal bodies and many of the statutes governing their actions provide that as a part of the expense of the "construction" of a public improvement must be considered compensation for architects, engineers, inspectors, etc. There are some cases holding that as a matter of law such compensation is a part of the cost of a public improvement which must be considered to determine the amount of money to be appropriated. This fact causes the architect at times to be interested in matters of taxation, assessments, etc., since if the tax or assessment is invalid, then there is no money to pay him. A school board has been held not to have power to contract for the remodeling of a schoolhouse on money voted and taxed to provide for an addition. Where public work is to be paid for by assessments which require the previous assent of the voters, there can be no recovery upon any contracts for such public work or for services in connection therewith if there has been no voting on the subject. Our fourth rule to prevent losses is: *Know that assessments or taxes to pay for public improvement work which include your compensation are valid.*

A municipal corporation must act through its properly constituted boards or officials. Every one is supposed to know their powers and govern themselves accordingly. Officials often act when they have no authority, and especially is this true in the employment of professional men such as architects, engineers, and experts. Boards must act formally at proper meetings to bind the municipality. Let us see what has happened by failures to consider this danger. In the city of New York the Board of Health is composed of three persons — the Commissioner of Health, the Police Commissioner, and the Health Officer of the Port. The Commissioner of Health is always planning new hospitals, new buildings of all kinds for his work, and additions, etc., to present buildings. As each of these men is very busy with his separate work, it has been found, at least in the past, that little attention has been paid to having resolutions passed by them at a board meeting authorizing the employment of architects for the Commissioner of Health's work. That particular Commissioner would order an architect to present sketch plans, etc. While the architect was in favor he usually got his pay, since the employment would later be ratified by the board; but if his work did not suit or if he fell from grace, there was no way for him to recover from the city. Instances of such losses by architects are numerous.

In another instance a professional man employed by a mayor of a city where the charter required employment by ordinance of the common council, was held not to be entitled to any recovery of compensation against the city. In this connection it might be pertinent to suggest that a city council or board cannot create an office for a professional man where the charter makes no such provision.

In the smaller communities the one man who usually dominates the board, council, or governing body, and acts as the spokesman, often neglects the proper steps to a

legal employment, especially of a professional man. These considerations give us one of our most important rules: *Know that the board or official employing you does so in the proper legal method required by the act incorporating the body or by the charter or by the local rules governing such body.*

Most of the statute laws controlling municipal corporations contain provisions that no contract shall be valid and binding unless there are funds at hand or an appropriation specifically made to pay for the contract work. It is the general rule of law that the architect who performs services under a contract, there being no funds or appropriation, cannot recover his compensation therefor. This rule in some instances has been somewhat tempered in cases of insufficient funds, and a recovery allowed to the extent of the money on hand. Therefore: *Know that funds are available or a specific appropriation made by the proper authorities to pay you before proceeding with your contract work.*

CONTRACTS AND PERFORMANCE. Municipal contracts are usually required to be in writing and signed by certain officials. There are many decisions under the New York City charter holding that a writing is not necessary for the employment of an architect. However, no architect should take such employment without confirming the important terms in writing, even though no formal contract is signed. Municipal contracts are very strictly construed and usually against the architect. While there are times when the architect must sign the regular city form of contract, yet the architect can often control or at least regulate the wording of his contract. Just lately an architect had a contract for court-house plans where he was to receive $1,000 if the building did not go ahead, but if it did then the $1,000 was to be applied as a part payment. The architect received the $1,000 for his plans. Other plans were then ordered and accepted from another party and the court house built. Action was brought by the architect against the county for breach of contract, but the court decided that since the building was not constructed according to his plans, the $1,000 he had received was all he was entitled to. A little care in the wording of the contract would have avoided such a result. Our seventh rule then becomes: *Have your contract in writing and know that it is worded properly.*

The architect who has never done municipal work can hardly appreciate the restrictions and barriers which bind him in his performance as differentiated from private work. In one case the court said that an architect employed to design a court house was required to exercise a high degree of skill and care, or in other words that ordinary average skill and care was not sufficient for such employment. In the preparation of his drawings and specifications the architect should act upon the theory that he cannot be paid for his work unless the lowest bid plus his compensation are equal to or less than the appropriation for the building. Those who comply with this theory can be assured of their pay; those who do not may or may not receive compensation for their work. This creates a serious situation because the architect must follow the directions and suggestions of the official having the work in charge. He also usually has no definite knowledge as to how soon the work will be advertised, and yet he is bound to anticipate contractor's bids. In one case, speaking of this determining of performance or non-performance of the architect by contractor's bids, the court spoke of the "moral impossibility of an architect being able to fix precisely the cost of any building if the cost is to be measured in any such capricious way as by the bids of contractors." How much more is that statement true on municipal buildings when the bids may vary several hundred thousand dollars. However, this is a condition which the architect must reckon with and its solution must necessarily rest with him.

Where there is no appropriation for the proposed building, but a cost limit is given the architect, then he does not have to exercise the same care, since a substantial performance on his part will entitle him to compensation. However, the limit of a substantial performance in this regard in municipal work is not as high as for private work. In one New York City case $52,500 estimated cost was held good where $50,000 was the limit. Another decision in that state which gives the general rule holds that if the bids are largely in excess of the cost limit, the municipality may abandon the work with no obligation to pay the architect.

Many municipalities have appointed a board to pass upon and decide as to whether plans and specifications for public improvements are proper and suitable for the city or for the character of improvement. In New York City this board is called the Art Commission and consists of the Mayor, the President of the Metropolitan Museum of Art, the President of Brooklyn Institute of Arts and Sciences, one painter, one sculptor, and one architect, residents of New York City, to be nominees of the Fine Arts Federation, and three other non-professional residents of the city. They serve without compensation. The approval of the Commission is required for all structures to cost more than $1,000,000. By request they act regarding all other structures such as buildings, bridges, approaches, gates, fences, lamps, etc., and as a matter of fact they are usually so requested. Hence the architect who gets a contract from the city of New York must count on satisfying the Art Commission, although nothing is said in his contract in that regard. In the large cities this practice is now common and as a check on the purely political architect it is certainly a good idea. Also it makes for uniformity and should bring about serious planning for the future of the city, which has been sadly neglected in this country. There is a danger of course that politics or certain art cliques may control such a board, and that is one of the matters for the architect's consideration when he contemplates taking a municipal contract. There would seem to be no question but what an architect who could not satisfy such a board and thus make his plans available for use, could not recover for the services rendered in preparing rejected plans.

In most cities all structures must be passed upon by a Building Department, which is another body that must be satisfied by an architect before his plans and specifications become available for use. This is also another requirement that is not mentioned in the contract of employment.

In his superintendence of municipal work the architect must know and recognize the limitations placed upon him. He should always read the builder's contract with the municipality, for therein are set forth his powers and authority, not only as agent for the municipality, but as arbitrator between the parties. Any order or direction to the contractor should be put in writing. Alterations must be made and additional or extra work must be ordered in

the specific way provided in the contract, otherwise the contractor may not be able to recover for such work. Never act in a manner which is not clearly specified. For example, the fact that work is to be done under your direction does not give you power to order extra work. The right to make such changes as may appear necessary or desirable only gives power to make changes in detail which do not alter or destroy the essential identity of the thing contracted for, and it has been also held that this right does not give him the power to increase the financial obligation of the municipality.

As an arbitrator in making estimates and issuing certificates, the architect in municipal work should be especially conscientious, honest, and capable, since his decisions usually bind the contractor absolutely and yet do not bind the municipality. That the law should permit such a condition is unusual and often unfortunate, but the architect should never take advantage of this to bulldoze a contractor. In municipal work where the amount of work is large between estimates, and where the payment of certificates is a long-drawn-out matter of red tape, the architect should make his estimates and issue his certificates promptly. Remember, though you have unprecedented powers as arbitrator, you cannot interpret the contract and conclusively decide that certain work is or is not contract work. Just a few instances where architects or engineers have caused the municipality large expense by their actions:

(*a*) Mistakes in lines, grades, elevations, plans or specifications or directions, whereby the contractor had either to do additional work or do over work already done.

(*b*) Requirement that the contractor do the work in a way not called for by the contract, entailing more expensive work than would customarily or otherwise be entailed.

(*c*) Requirement that the contractor do over work already done properly or repair or maintain the same.

(*d*) Requirement that the contractor do work not within his contract as contract work.

The time wasted by and the financial losses of the architect, contractor, and municipality in such cases should cause the architect to endeavor to be thoroughly posted as to the legal phases of these situations. These considerations recommend the rule: *Have and put everything in writing and act only upon the strict wording of all documents.*

Let us now consider briefly some of the cases wherein the architect has had to sue municipalities for his compensation. The usual rule of law regarding breached contracts permitting a recovery on the *quantum meruit* or reasonable value for work done and prospective profits for the work not done, does not seem to prevail generally in municipal cases, the tendency being to restrict the recovery solely to the reasonable value of work done.

While ordinarily an architect cannot recover on a municipal contract which is void on account of there being no appropriation, no funds, no power to contract, etc., yet there are instances where certain recovery has been allowed. A recent decision of this sort permitted the recovery of actual cost of services and of material furnished with interest at the legal rate, but excluded profits. Other cases make a distinction where there are mere irregularities in the employment of professional men and recovery of the contract value is permitted.

There are also other decisions holding that where the refusal of a municipality to pay is due to its failure to take proceedings for an assessment or to collect the same, and where the city has the benefit of performance, then the city should be liable for the contract price.

These actions against municipalities are fought bitterly and every technical defense that can be thought of is used. A common and difficult plea is that the contract is conditional; that is, since the compensation is a percentage of the cost of a building, when the building is not constructed then there is no liability for any work done. A contract requirement for partial payments is the best means of preventing that danger.

State work is even more dangerous than municipal, because of the fact that you have no redress should the contracting official break the contract or act as he pleases. In a very few states, boards or courts of claims have been established, wherein a claimant against the state or any of its departments may present his wrongs and get a legal hearing and decision. All of the difficulties and dangers just suggested in regard to municipal work are pertinent in this class of work. Those unacquainted with such work are warned that experience has proven the value of our rule following: *Ascertain first if there is a state board or court of claims; if not, you must depend on the official honesty and integrity of the official with whom you deal. Remember personal honesty and official honesty are contradictions in some officials.*

Government work is surrounded by many of the restrictions and red tape of municipal work, but the United States Court of Claims is open to those who feel themselves aggrieved. Its decisions as a rule are tempered with more equity than the decisions of most state courts. The government contracts, however, are models of what a contract ought not to be, with their many unfair, unreasonable, and one-sided clauses. Of course this criticism is not as applicable to the contracts for professional services as to the construction contracts. But the existence of such construction contracts, with the increased authority of the architect or engineer, often give them absolute power to make or break the contractor. These are the cases which test the ability and integrity of the architect as in almost no other situation, and conscientious, honest, and common sense actions and decisions prove the real architect.

SUMMARY. The architect who for the first time contemplates taking on municipal, state, or government work must realize that the liberties which he took either in his architectural or superintending work in private practice cannot be permitted in this public work. He is rigidly bound by state statutes, charters, or local regulations, his contract of employment, and the construction contract. Everything must be formal and must be governed by the strict wording pertaining thereto. Statutes, charters, local regulations, and the laws governing contracts are changing daily; they may differ not only in adjoining states, but in adjacent counties and cities. What you knew of such matters five years or even six months ago may cause you serious trouble and loss. The present and its requirements are all that count. You must be up-to-date. Our rules which we have formulated as we went along may be summed up in a motto which should be a reminder and warning of the many dangers suggested: "*Never consider or do any public work without first consulting competent legal advice.*"

EDITORIAL COMMENT AND NOTES FOR THE MONTH

"A HOUSING problem may be said to exist wherever any portion of a population dwells under conditions dangerous to health, safety, or morality." The problem of housing in Newark, N. J., has been made the subject of a most instructive report by E. P. Goodrich and George B. Ford, who continue the definition of their subject by saying: "The problem is present to some degree in every American city. It is usually occasioned primarily by the lack of guidance in urban growth, by poor planning of buildings, faulty construction, and defective sanitation; it is aggravated by the greed of some landlords, the carelessness of some tenants, and ignorance of the laws of hygiene on the part of both. The result of bad housing is ill health, both physical and moral, and thereby industrial inefficiency, unemployment, and a long chain of preventable social maladies, which are very costly to the community, and which place a heavy handicap upon individual and social achievement.

"Man's dwelling exerts a marked influence upon his life and character. From one-third to one-half his time, and much more than half of the time of women and children, is spent in the home. Bad housing conditions affect health insidiously by slowly undermining the vitality and thus rendering the individual susceptible to disease."

In a chapter devoted to the best type of housing for new areas the authors ask and answer the question: "What is the most desirable dwelling place, the tenement or the cottage? In the cities of the Northeastern states we have become accustomed to the tenement house and do not ordinarily question its social utility. There is scarcely a city in the country that is attempting in any well-considered way to eliminate the tenement house, yet there can be no question but that it is an undesirable place of residence for families with children. Even for the childless family the most expensive apartment house as well as the cheapest tenement may constitute an undesirable environment because of the facility with which diseases may pass from one apartment to its neighbor through the common hall and through the mediation of vermin, which pass easily from one suite to another. Where people live in apartments also, there is concentration of population and thus much traffic in the neighboring streets, which keeps the air full of dust and noise and thus renders apartment living unhealthful and unpleasant. The sounds from neighboring apartments frequently make rest and quiet impossible. True privacy and solitude, though very important to the growth of the moral individual, are difficult to obtain. For the family with children, the apartment is still less desirable. It becomes impossible for the mother of a family to choose her children's associates, to prevent her child from coming in contact with children or adults of unwholesome character who may reside within the same building. The mother cannot supervise the play of her child when outside of the apartment, and in general the atmosphere of the tenement or apartment house is one destined to create a race of adults that are unhealthful, puny, and, socially, highly artificialized.

"In the cottage, however, it is possible to obtain all necessary privacy for true home life and personal development. The reduced dust of suburban communities and the larger penetration of sunlight make cottage homes healthier living places for infants and growing children. The mother of the family can supervise the play and the associates of her child in the garden. The adults of the family, if so inclined, can profit in health at least and sometimes in economy by cultivating a garden outside of working hours. The children gain the advantage and education that comes from daily contact with the things of nature, especially through the garden. It is probable, therefore, that at least for families with children, the suburban home is preferable to the tenement."

MR. FREDERICK L. ACKERMAN, A.I.A., explains in his paper on "Present Unfortunate Conditions of Practice and the Remedy" (*Journal of American Institute of Architects*) that the task of the architect is twofold. "As architects and as artists our duty is to formalize and to express in material form the activities and thought of our day. This we do quite unconsciously in our offices, and our achievements there are an exact measure of our individual ability and the limitation set by the people in their laws and ordinances. No amount of inspiration, no degree of talent, will carry us beyond a simple expression of the demands and desires of the people, and the limits set by them in the laws and ordinances which stand as the principal factors in our progress.

"As citizens, our duty is to provide the conditions for a better architecture. Our knowledge of the arts, the logical nature of our training, and our attitude of mind towards such problems entitle us to the position of directing the forces which are at hand. We know the nature, the importance, and the necessity of the laws needed. We also know better than the people why these laws cannot be passed, for we have tried and failed.

"Our task, therefore, if we are to spend our time and effort in other than a useless endeavor, is to explain to the people by every honorable means within our power, and in terms of logic and common sense, the simple nature of our ideals, to the end that all shall come to understand and realize that idealism of the architect and the desires of the people for a habitable city are but the same thing."

THE Forty-Seventh Annual Convention of the American Institute of Architects will be held in New Orleans on December 2, 3, and 4. There are now thirty-five chapters of the Institute, all of which will be represented at the forthcoming convention.

PLATE DESCRIPTION.

Euclid Avenue Temple, Cleveland, Ohio. Plates 129, 130, 131, 132. The architecture of this Jewish house of worship is based on a modified form of the Byzantine style. It has many characteristics, however, of the type of brick architecture familiar to Lombardy, which is suggested particularly by the entrance detail and the gable of the principal façade.

The design is full of strength and vigor and composes well in mass, but it must be confessed that there are a great many elements making up the composition which with the varying heights of cornices and subordinate projections tend to give a somewhat restless effect. It is nevertheless expressive synagogue architecture and of particular merit when considered in relation to the materials employed in its construction. The brickwork is very effective and in combination with the red tile of the roofs and the ornamented terra cotta it conveys a feeling of Oriental richness, particularly apparent in our illustration of the principal façade. The double entrance, which is the main feature of this elevation, is frequently an awkward element to handle, but in this instance it is entirely satisfying and harmonizes well in scale and form with the main gable. The small columns disposed in the window openings are pink marble, and the various light spots relieving the brick walls are of Tennessee marble. The brick is of various tones, running from a bright red to nearly blue, and is laid in gray mortar with wide flush joints.

The building is composed of two separate parts, the auditorium proper and the vestry with its Sunday-school rooms, connected by a corridor running transversely across the building. The auditorium is surmounted by a Byzantine dome admitting a flood of light from lantern windows. The floor is pitched toward the pulpit, and the seats which are arranged in semi-circular form are of the individual opera chair type with pew backs and ends, so as to provide the advantages of the individual chair and yet give the auditorium the appearance of a church.

The auditorium is entered through a large vestibule, at either end of which are toilet rooms and the stairs leading to the gallery. The woodwork of the interior throughout is quarter sawed oak finished in a silver gray tone. The carpets are red and the dominant tone of the windows is amber. The effect upon the eye is extremely soft and pleasant, and imparts to the worshiper a feeling that he is in a house of worship.

Auditorium, University of Illinois. Plates 133, 134. The auditorium was built to serve as a gathering place for congregations and meetings of the undergraduate body and for the commencement exercises. At the extreme southerly portion of the college grounds as at present laid out it occupies the central point of the prospective development of the university which is to ultimately extend far to the south, east, and west. The auditorium faces on the campus, which will ultimately be entirely devoted to buildings of the colleges for Natural Sciences and Liberal Arts, and is upon a slight rise dominating the so-called south campus.

The exterior is of brick and Indiana limestone with inlaid panels of marble mosaic. The dome is covered with tin and painted with aluminum bronze. In plan the building includes a circular auditorium preceded by a broad memorial vestibule and enclosed by a corridor running around on each side with entrances and exits at each of the four corners. There is a single balcony and the auditorium is equipped with a shallow stage intended only for public speaking. The auditorium seats about twenty-five hundred people. The construction includes a fireproof floor in the first story and balcony, the roof and the dome being of second-class construction. The dome is really a framed roof consisting of coupled columns at each corner with connecting trusses springing across to give the outline.

The funds available for this building were extremely limited, and the interior has practically no elaboration whatever. It was built at a total cost of $121,631.

Ridge School, Newark, N. J. Plates 135, 136, 137. The Ridge School is an interesting design for a grade school located on a residential street. Its chief architectural features are derived from the brick architecture of Holland and carried out in a pleasing combination of red brick, stone, and light-colored terra cotta, which imparts to it a peculiarly domestic feeling — something to be desired in a building in which young children are to begin their education. There is a singular charm about the central pavilion with its arcaded entrance and large, elliptical headed windows above. The columns of the lower story are limestone, while the walls of the loggia are cement plaster marked off in courses similar to stone.

The building contains fourteen class rooms, to accommodate about forty pupils each, a generally accepted and convenient number for securing equal advantages for every pupil. The arrangement of the class rooms follows the precedent of modern German schools in regard to lighting. Windows are placed on only one side of the room and the pupils are seated so that all the light comes from their left side. Wardrobes are provided for each class room with access to them from the rooms. The main floor contains a large assembly hall, two stories high, with a balcony at the rear. It is approached from the main entrance, so that if occasion demands it can be used for purposes other than those strictly connected with the school. The principal corridor and the location of the stairs in relation to it show a very efficient point in planning. The corridor runs parallel with the main frontage of the building with enclosed stairs occupying either end. Windows on these stairs provide cross ventilation, and access to the outside is arranged at a landing of the stairs on the grade level, making the dismissal of the pupils in case of emergency possible without any confusion and in a few minutes' time.

House at Cleveland, Ohio. Plate 138. The plan of this small suburban house shows some unusual features. The most uncommon, perhaps, is the intimate connection of the garage with the house proper, together with the position of the main stairs which are equally accessible from the garage or the main part of the house. While this may be a very convenient arrangement for an owner not employing a chauffeur, it does not seem an ideal one, and in some communities it may not be possible owing to building laws or insurance regulations. It is, however, handled successfully in the elevation and provides space for a large sleeping porch on the second floor. The materials employed in its construction are red brick of a soft texture with cream colored stucco and brown stained wood

beams. The total cost was about $7,500, or about 24 cents per cubic foot.

HOUSE AT COLUMBUS, OHIO. PLATE 139. This house in design is a version of Colonial forms with a modern treatment. Its chief interest centers in the entrance doorway, which is an example of careful detailing and is entirely pleasing, with the possible exception of the cornice, which appears somewhat heavy in contrast with the columns and treatment of the door itself.

The exterior walls are of a rough textured red brick laid in gray mortar. The roof is shingled, stained a soft green, and the exterior woodwork is painted cream white.

The interior is well finished, several rooms being in oak with high wainscots and ornamental plaster ceilings. The total cost of the house was $26,250, or 25 cents per cubic foot.

HOUSE AT HARTFORD, CONN. PLATES 140, 141, 142. This type of house, as to size and general requirements, is fairly representative of what can be accomplished in cities which are not so large as to make a reasonable property area prohibitive in cost. The lot is about 250 feet front, facing east on a quiet residential street and extending westerly some 500 feet, sloping gradually to a small river with heavily wooded banks, which forms the irregular western boundary. The house is placed, broadly speaking, in the northeast corner of the property, leaving the maximum area unobstructed on the south and west. The service road is built along the northerly line, giving turn around and access to the garage, which is placed in a secluded position on low ground near the river and further concealed by planting.

The small formal garden was sympathetically carried out by Arthur A. Shurtleff with the co-operation of Miss Virginia Brown. Architectural details of the house were used as a basis of form and motif in the structural work of the garden entourage. The formal garden itself is small but quite charming, with the old apple tree prudently retained as the old friend about which the garden is established and ever reflected in the central pool. The stone hut with thatched roof and Persian tiles inserted in the walls sounds descriptively incongruous, but owing to its clever treatment is quite the reverse, giving just the unexpected element of spice that is the joy of a witty conversation.

The house is of wine-colored brick, laid in Flemish bond with wide gray joints to carry through the wall surfaces the gray of the limestone and woodwork. Convenience of plan and sound construction (steel beams and reinforced concrete floor slabs) were the primary requirements of the owner, whose sympathetic attitude in matters of design placed all responsibility, therefore, where it belongs — on the architects.

The stair hall and office are in dull gray brown oak, the remainder of the principal ground floor rooms and bedrooms are conservatively treated in painted trim of quiet and conventional design. No stunts appear, though care and discretion were not forgotten in the combination of materials where decoration could be combined with structure.

The south porch (enclosed in winter), except for the balustrade, is practically all of clay products. The floor is of 6 x 9 inch roofing tile, laid so as to form squares with hollow centers, in which are set decorative tiles. The walls on the house side are of brick with a small stone foundation, while the ceiling is a tile vault.

A reinforced concrete mattress under the concentrated load of the largest of the chimneys allowed later free use in the garden of a magnificent peat bog that was found there when the excavations were nearing completion and the footings had been elsewhere so far advanced as to make a shift in location too expensive to be considered.

The unusually robust character of the planting for so new a place is somewhat due to a water supply limited only by the activities of an electric pump, drawing from the river and free from the oversight of the city fathers who are concerned only with the house supply.

DENTAL OFFICE BUILDING, HARTFORD, CONN. PLATES 143, 144. This building presents a solution of a somewhat new problem. We are familiar with co-operative offices for lawyers and other professional men, but a building intended to provide operating rooms for a group of dentists calls for a new solution and requires obviously different treatment.

The main requirement of such a building is light, and therein lies the chief difficulty in securing a satisfactory design. The problem becomes at the outset the adoption of some scheme to combine sufficient window area with a good external effect. That the light should reach as far as possible into the room, lintel windows placed well toward the ceiling are also required. These conditions imposed by the uses of the building have been recognized in this design and have resulted, as they should, in the architectural form that gives expression to the structure.

The plan was influenced to a large extent by the peculiar shape of the lot. It provides four operating rooms with a large working laboratory on the second floor, each of which is an independent unit and equipped with a lavatory, compressed air, gas and electric outlets, and an inter-phone. The walls are plaster, tinted a blue gray, with the door and window trim enameled white.

The first floor is taken up mostly by a reception room and entrance hall with a dignified staircase to the second floor, the treads and risers of which are Tennessee marble with an iron hand rail. The entire first floor with the exception of the garage is paved with red quarry tiles.

The exterior follows Colonial motives in its detail. The porches and cornices are wood and are examples of exceedingly delicate detail. The walls are of red brick with a rough texture, laid with black mortar with a wide raked joint and are relieved by white marble trim and iron balconies at the windows. The total cost of the building, not including the dental apparatus, was $20,500.

COMPETITION DRAWINGS.

WE have in our possession many drawings which have been submitted in THE BRICKBUILDER competitions. In every instance these drawings are being held because the return postage has not been sent us, although we have advised every owner of the drawings of this fact two or more times.

We hereby give notice that unless postage ($.25 in stamps) is sent to us between now and October 1, 1913, all these drawings will be destroyed. Upon receipt of postage the drawings will be immediately returned.

ROGERS AND MANSON COMPANY,
85 Water Street, Boston, Mass.